NAVAL POSTGRADUATE SCHOOL

Monterey, California

THESIS

RESISTANCE TO TOTAL QUALITY LEADERSHIP CHANGE: AN EVALUATION OF INDIVIDUAL MARINE RESPONSES TO TQL PRINCIPLES AND CHANGE

by

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December, 1991

Thesis Advisor: Benjamin J. Roberts

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92

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION Unclassified	1b. RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution is unlimited.
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S)	5. MONITORING ORGANIZATION REPORT NUMBER(S)
6a. NAME OF PERFORMING ORGANIZATION Naval Postgraduate School 6b. OFFICE SYMBOL (*If applicable*) 036	7a. NAME OF MONITORING ORGANIZATION Naval Postgraduate School
6c. ADDRESS (*City, State, and ZIP Code*) Monterey, CA 93943-5000	7b. ADDRESS (*City, State, and ZIP Code*) Monterey, CA 93943-5000
8a. NAME OF FUNDING/SPONSORING ORGANIZATION 8b. OFFICE SYMBOL (*If applicable*)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c. ADDRESS (*City, State, and ZIP Code*)	10. SOURCE OF FUNDING NUMBERS Program Element No / Project No / Task No / Work Unit Accession Number

11. TITLE (*Include Security Classification*)
RESISTANCE TO TOTAL QUALITY LEADERSHIP CHANGE: AN EVALUATION OF INDIVIDUAL MARINE RESPONSES TO TQL PRINCIPLES AND CHANGE (UNCLASSIFIED)

12. PERSONAL AUTHOR(S) Marc Thomas Nicholls

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (*year, month, day*)	15. PAGE COUNT
Master's Thesis	From To	December 1991	142

16. SUPPLEMENTARY NOTATION
The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

17. COSATI CODES			18. SUBJECT TERMS (*continue on reverse if necessary and identify by block number*)
FIELD	GROUP	SUBGROUP	Total Quality Leadership TQL Total Quality Management TQM Change Resistance to Change Resistance to TQL

19. ABSTRACT (*continue on reverse if necessary and identify by block number*)

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20. DISTRIBUTION/AVAILABILITY OF ABSTRACT	21. ABSTRACT SECURITY CLASSIFICATION	
☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS REPORT ☐ DTIC USERS	UNCLASSIFIED	
22a. NAME OF RESPONSIBLE INDIVIDUAL Benjamin J. Roberts	22b. TELEPHONE (*Include Area code*) (408) 646-2792	22c. OFFICE SYMBOL AS/Ro

DD FORM 1473, 84 MAR 83 APR edition may be used until exhausted
All other editions are obsolete

SECURITY CLASSIFICATION OF THIS PAGE
UNCLASSIFIED

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Resistance to Total Quality Leadership Change: An Evaluation of Individual Marine Responses to TQL Principles and Change

by

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Submitted in partial fulfillment
of the requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
December, 1991

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ABSTRACT

This thesis is an attempt to make available to Marine Corps planners data gathered about predispositions of Marines of different ranks to changes prompted by the implementation of Total Quality Leadership (TQL).

A survey was conducted to examine the attitudes of 331 Marine Corps staff noncommissioned officers (SNCOs) and commissioned officers concerning different examples of TQL changes. Criteria were developed for identifying the incidence of resistance by rank to these changes and for identifying characteristics that may influence group response. The results serve to identify that while the principles of TQL do not meet identifiable resistance among the Marines surveyed, certain TQL changes seem threatening to specific groups.

Change, resistance to change, and resistance to Total Quality Management/Leadership are explored. Ways to overcome the resistance identified are discussed.

TABLE OF CONTENTS

I. INTRODUCTION

A. BACKGROUND

1. Total Quality Management/Leadership

Today, forced by the combined pressures of competition and constrained resources, industry and government organizations are being pressed to reassess the quality of their products and services. This pressure to improve performance is requiring managers to enlarge the scope of their strategic plans to include goals embodied in the quality philosophy. In government, the Department of Defense (DoD) and the Department of the Navy (DoN) are implementing quality initiatives to increase their own productivity and add value to the limited and decreasing dollars of the defense budget. Their initiatives are called Total Quality Management (TQM) and Total Quality Leadership (TQL), respectively, and are essentially synonymous. (I will use the terms interchangeably in this document.)

Quality initiatives embrace a philosophy of continuous improvement in performance at every level and for every process. To understand the philosophy, it may be easier to first define what it is <u>not</u>. Simply put, these quality initiatives are not programs, i.e., a set of specific procedures developed to address a specifically defined

problem. They are not designed only to regulate quality within DoD systems or products, nor are they traditional management techniques (camouflaged by new names) created only to increase individual or group productivity.

In contrast, these quality philosophies require a broadened focus, the ability to look beyond short-term product failures to identify the larger wastes in the system that repeatedly create defective products/services or inhibit quality goals. The need to discern the nature of the underlying problems which continuously hinder the quality of output does not preclude commonly used solutions to quality problems. It does require, however, a steadfast determination on the part of managers and leaders to solve more than the piece of the puzzle immediately before them. A memorandum from the Secretary of Defense describes the TQM approach this way:

> Improvement is directed at satisfying such broad goals as cost, quality, schedule, and mission need and suitability. TQM combines fundamental management techniques, existing improvement efforts, and specialized technical skills under a *rigorous, disciplined structure focused on continuously improving all DoD processes.* It demands commitment and discipline. It relies on people and involves everyone.[Carlucci, emphasis added]

In the DoN Executive Steering Group Guidance on Total Quality Leadership, the Secretary of the Navy summarized TQL in a similar vein:

> TQL is an approach to leading and managing that is guided by a total view of how all systems of work and people blend together to meet mission requirements, and ultimately perform the service for our country. TQL is a

> bottom-line approach to assess and improve continually the processes by which an organization conducts its business. Lower operating costs, increased satisfaction on the part of the customer or end user, increased productivity, and improved operational readiness will result as quality improves.[Garrett]

TQM and TQL philosophies require conceptual leaps in thinking as government managers and military leaders overcome their habitual concern for end-results and begin to consider the whole process. Product end-use inspection gradually must be replaced by system evaluation. Using TQM techniques, workers are directed to meet internal as well as external customer objectives, thus improving the process -- and consequently the product -- at every level of the organization. By taking an approach which evaluates the entire system, industry and government can maximize the value added by each individual or each process to the development of the whole product or service which is driven by customer requirements.

2. Origins and Principles of TQM

The foundations of quality management theory can be traced back to the development of statistical process control (SPC) and the Plan-Do-Check-Act cycle of Dr. Walter A. Shewart, a statistician at Bell Telephone Laboratories in the early 1920s. Introduced to the U.S. government in the 1930s and to industry during the Second World War, quality control and statistical process control were used to evaluate defense industry products. However the end of the war, the effects of

mass production in U.S. industry, and a captive world market impeded the continuation of quality management methods by 1949. By that time, "quality management" in America had been reduced conceptually to mean "final product inspection".

Much of the credit for the development and proliferation of current quality management techniques belongs to the Japanese. Their industries had been completely devastated by WWII. Introduced to quality philosophy and quality control methods by American thinkers W. Edwards Deming, Joseph M. Juran, and Armand V. Feigenbaum in the 1950s, the Japanese immediately began to apply teachings abandoned by U.S. industry. They focused on the customer's, not industry's, definition of quality in products and services. The Japanese learned to apply these principles not only to the production line, but to all facets of their industrial organizations. By the mid 1950s, Japan was beginning to capture world markets.

In this country, pressure to compete with the Japanese finally has resulted in the reemergence of quality management techniques in U.S. business and industry. Now Total Quality Control, the Japanese management philosophy, can be seen in some form or another in most major, progressive American businesses. Ford Motor Company, Hewlett-Packard, Cambell Soup Company, AT&T, General Electric, Monsanto, Westinghouse, Proctor & Gamble Company and Digital Equipment Corporation are among the scores of companies who actively have incorporated

total quality concepts into their endeavors.[Walton, 1986] Similar pressure is spreading to the public sector. In government, TQM is viewed not only in the DoD as important to improving services, but it also is utilized by the IRS, the departments of Agriculture, Commerce, Education, and Energy, the CIA, GAO, FAA, NASA and within many state and local governments.[Carr and Littman]

The principles of quality management philosophy are relatively simple to grasp. However, they significantly contrast with traditional management philosophy in many ways. For example, Mary Walton (1986), in The Deming Management Method, outlines Deming's "Fourteen Points." These principles provide the foundation for the DoN's TQL effort today. They are fairly representative of the change in management thinking mandated by the quality philosophy:

1. ***Create constancy of purpose for improvement of product and service.*** Business and industry should focus not only on staying in business, but on expanding their markets as well. This can only be done by engaging their personnel in research, innovation, constant improvement, and maintenance to support common aims/goals.

2. ***Adopt the new philosophy.*** Too used to accepting poor workmanship or performance, U.S. business leaders need to develop in their organizations a culture where recurring mistakes are not tolerated and negativism is unacceptable.

3. ***Cease dependence on mass inspection.*** Typically a product is inspected at major stages or in its finished state. Unnecessary expenses are incurred in correcting or throwing away the defective products. Quality improvements result not from inspection of the end-product but from improvement of the process from which the product is made.

4. ***End the practice of awarding business contracts on price tag alone.*** The lowest price bidder usually gets the job. As a result, supplies are often of low quality. Rewarding the bidder with the best quality and working to achieve quality from a small number of suppliers should be the goal.

5. ***Improve constantly and forever the system of product and service.*** Improvement is a continuous process. It is the responsibility of management to model and encourage continuous efforts to eliminate waste and improve quality.

6. ***Institute training.*** Jobs learned in an informal training environment often lack the complete instruction necessary to be efficient.

7. ***Institute leadership.*** Leadership, not punishment and directives, is the job of the supervisor. Identifying by objective methods those in need of help and helping them do a better job is quality leadership.

8. ***Drive out fear.*** Feelings of individual security are necessary for employee willingness to contribute to process improvement or question what they do not understand.

9. ***Break down barriers between staff areas.*** Teamwork is essential to the development of any product or service. Competition between staff areas or incongruent goals hinders this development.

10. ***Eliminate slogans, exhortations, and targets for the workforce.*** Exhortations do not help people do a better job Slogans can be demotivating. Most problems are due to the system. If slogans are necessary, let employees create their own.

11. ***Eliminate numerical quotas.*** Quotas reflect numbers and shift the focus from quality or methods to quantity. This shift easily ignores gross inefficiencies and results in higher costs. Standards, quotas and goals too often do not consider system capabilities.

12. ***Remove barriers to pride of workmanship.*** People can be encouraged to produce to the best of their ability. Barriers such as misguided supervisors, poor equipment, and defective materials prevent employees from doing the good job that they desire and of which they are capable.

13. ***Institute a vigorous program of education and retraining.*** Quality cannot be achieved unless both management and the workforce understand quality methods, tools and techniques necessary for teamwork.

14. Take action to accomplish the transformation. Total Quality Management planning and implementation first must be performed at the top. An understanding of these fourteen quality concepts by a "critical mass" within the organization is crucial to successful implementation.

Profound changes in both thinking and institutional systems undoubtedly will be necessary to support an organization's transition to quality behavior. The promulgation of TQM philosophies will redefine values and beliefs of the workplace culture, affect leadership styles, and alter formal management processes and organizational structure. Many of these adjustments will be unwelcomed. Reforms as comprehensive as these are bound to produce something common to all change processes -- resistance.

B. OBJECTIVES AND RESEARCH QUESTIONS

1. The Objective

This thesis will explore the factors affecting the acceptance and implementation of TQL change in the military environment. The goal will be to identify resistance to TQL change. In doing so, this thesis will provide useful information to military organizations on existing attitudinal barriers and technical objections to total quality initiatives. By understanding the values and beliefs of their personnel, military leaders will be better able to shape the introduction of total quality ideas and better facilitate the transition to total quality processes.

2. The Research Questions

The following specific research questions will be addressed.

a. Primary Research Question

What is the incidence of resistance to TQL change among individuals in the military?

b. Secondary Research Questions

- What is the basis for this resistance by rank?
- Are there identifiable patterns of these concerns?

c. Scope, Limitations, and Assumptions

(1) Scope. The focus of this thesis is to identify where resistance to TQL theory, tools and techniques exists and to assess the underlying causes of this resistance. This thesis is not an evaluation of quality theory or methods and does not advocate a particular approach to implementation. Neither is it an evaluation of organizational change theories or change processes. For the benefit of those planning the transition to a total quality effort, this thesis is an exploratory study of individuals' resistance to change.

(2) Limitations. Data to support this thesis was gained from questionnaire responses of students of various schools at Marine Corps University, Marine Corps Combat Development Center, Quantico, Virginia. Due to the timing of the data collection, not all schools necessary to gain responses from all ranks were in session. Therefore,

conclusions can be drawn only by evaluating those ranks actually surveyed.

(3) Assumptions. This thesis requires that the reader possess only a basic understanding of the tenets of total quality philosophies to understand why organizations may experience some resistance to TQM at every level. To benefit the unfamiliar reader, Chapter I of this thesis presents a brief overview of TQM, its origins, philosophies, and its implementation history.

d. Literature Review and Methodology

The basis of this thesis is a review of TQM and change management literature, with an emphasis on the latter. A survey has been constructed to measure individuals' commitment to change and resistance to TQL change among Marines of different demographic characteristics, i.e. ranks, occupational specialties, staff experiences, etc. The survey questions pertaining to TQL were based on the methods, tools and techniques of TQM described in the literature. The questions then were evaluated by TQM experts in the military for content and face validity. The questions relating to resistance to change were based on the literature alone.

e. Organization of Study

As described above, Chapter I traces the genesis of the quality philosophy and its basic tenets. Chapter II reflects on the process of change and the nature of resistance

to change theory. It discusses definitions and types of change, reasons for resistance, and how this resistance manifests in individual responses to change. This will provide the foundation for evaluating individuals' resistance to TQL. Survey and analysis methodology are outlined in Chapter III; while the survey response data and an analysis of it are discussed in Chapter IV. Finally, conclusions and recommendations based on the survey results are outlined in Chapter V.

II. LITERATURE REVIEW

Few people outright resist change or innovation. Rather they resist or accept change on the basis of its effect on their individual experience. Individuals may recognize the merit of a new idea, yet recoil at the adaptation to thinking or ways of behaving required by the new idea. In short, *resistance may be to the phenomenon of change itself rather than to the substance of the change.*

The implementation of Total Quality Leadership in the Marine Corps is an example of a long-term organizational change. Like their counterparts in the American industrial sector, Marines can be expected to resist to some degree a comprehensive leadership philosophy that at first glance appears qualitatively different from the ideals held by generations of their predecessors. For the Marine Corps to be successful in its efforts to implement TQL, Marine leaders must understand the human and organizational predisposition to resist change in this, or any, change effort. To this end, this literature review will outline models of change processes, suggestions for managing the personal and organizational side of change, and theories of resistance to change. The chapter then will conclude with reasons why individuals may resist TQL/TQM in particular.

A. CHANGE

The reality of today's world, in business, in government, or in the military is that no one can avoid change. The dictionary defines change as "the act or process of substitution, alteration, or variation." It may either be reactive or planned. Organizational change is any substantive modification to some part of the organization.[Griffin] Changes in an organization may be targeted at organizational tasks, its structure, its technology, or its people. In addition, changes can be evaluated as technological, political, or social in nature.[Tichy] Change is multifaceted and paradoxical.

1. Forces for Change

Pressures or forces that cause a change may be either *internal* or *external* to the organization.[Griffin] Due to changing circumstances, an organization may be required to respond to its environment or outside threat and may have little choice of whether or not to change. In business, the effects of economics, maturing industries, technology, competition for available resources, and changes in laws and regulations are all external forces that have profound influences on the way a multinational organization is structured and does its business. A business may be forced to change by the external forces created by suppliers, consumer tastes, federal regulations, stockholders or unions.

Failure to anticipate or respond to changes in an organization's environment is a primary reason for many organizational stresses. After World War II, for example, the Marine Corps enjoyed high public prestige. At the same time, however, upper echelon Marine officials were forced to acknowledge a serious external threat to the Marine Corps' existence emanating from their "rival" military service. During the next several years, the Marine Corps endured a sharp challenge from the Army General Staff, whose objective since before World War I had been to reduce the Marine Corps to a minor security and ceremonial unit.[Estes] Fortunately, the Marine Corps was able to respond successfully to this external force and drastic organizational change ultimately was averted.

Internal forces are those forces within an organization that may demand organizational change. Revisions of strategy, changes in leadership, the development of new products or services, or the shift of sociocultural values all may serve to exert pressure on an organization to respond with change. Identifying and assessing the strength of internal forces can make a difference in the managerial choices of not just *whether* to change, but also *how* to change.

The interdependent relationships within and between external and internal forces make identification of these forces paramount to developing strategic plans for organizational change and/or stability. Clearly defined

goals, adequate communications, and adaptability within an organization serve to help leaders and managers successfully cope with these various sources of pressure for change. They can also serve to identify the likelihood of resistance to change and help leaders develop strategies to deal with it.

2. The Change Process

Planned organizational changes can be achieved by altering an organization's structure, its technology, and/or its people. By rearranging an organization's internal systems (such as lines of communication), by altering its processes or techniques, or perhaps by changing the relationships, attitudes or roles of organizational members, an organization can be moved from one state of performance to another. Many authors have developed models of the change process to help organizations evaluate themselves and plan their changes. These models can be generally categorized as theory-based, consultant-based or practitioner-based. Lewin's **Change Process**, Kolb and Frohman's **Planning Model**, and Beckhard and Harris' **Change Management Model**, respectively, are representative of these categories.

a. Lewin's Change Process

One of the earliest, and certainly one of the most fundamental, descriptions of the process of change was developed by Kurt Lewin, an organizational theorist, in 1947. As depicted in Figure 1, Lewin's view of the change process

consisted of three steps: unfreezing present organizational behavior, moving the behavior (the change), and refreezing the organization in the changed state. He believed that successful modification of or within any organization relied on the leadership's ability to manage the forces involved in maintaining the status quo.

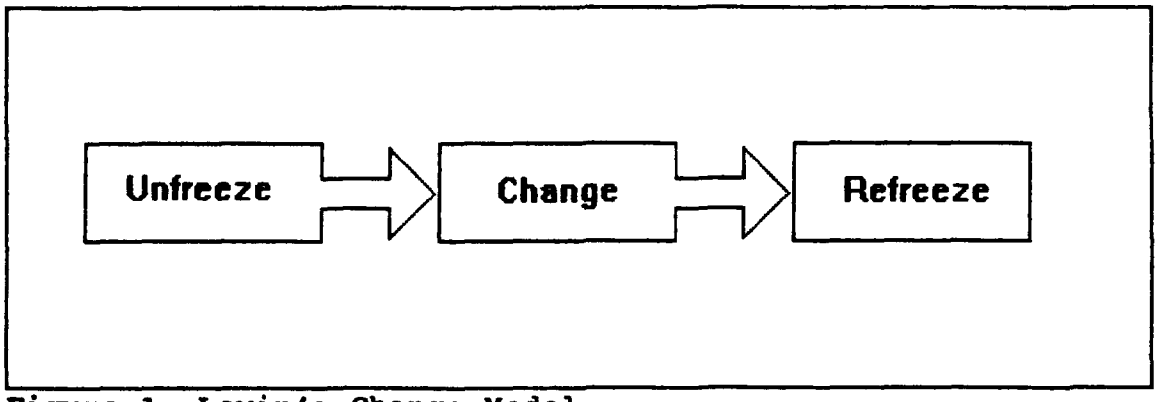

Figure 1. Lewin's Change Model

Lewin recognized that social and organizational change was similar to the behavior of charged particles in a magnetic field -- it was the result of a modification of two sets of opposing forces. The first set of forces were those factors or sources of power that were *driving* the change. The second set of forces were those sources of power that were *restraining* the effort to change. If the strength of the driving forces were equal to the strength of the restraining forces, "quasi-stationary equilibrium" would occur. In other words, the current levels of behavior would remain and the status quo would be maintained. If the strength of the driving forces became greater than the strength of the

restraining forces (by a deliberate effort or by the weakening of the restraining forces), then change would occur.

Figure 2 represents an example of Lewin's "force field." In his experiments he looked at changes in the level of performance by individuals and groups of workers in a factory setting. A *factor* is identified as either a driving or restraining force according to it's relationship between the individual/group and the task. In Lewin's study, the factors that represented the driving forces were those behaviors propelled by a new technology, a new process, a new organizational structure, etc. Ambition, individual goals, or personal needs (especially financial needs) were examples. Factors that represented the restraining forces were reactions prompted by the change, e.g. individual fears, reference to group norms to maintain the acceptable group standard of performance, and loss of individual status. In addition to these forces, Lewin offered "historical constancy" as a creator of an additional force field that may limit the amount of change that actually may be achieved.

Lewin's study demonstrated that an organization's level of performance could be changed (increased) either by decreasing the group norms which support current (low) levels of performance or by increasing pressures to produce at higher levels. From his observations, Lewin suggested that, of the two options, the more effective strategy for change was the one that focused on modifying (weakening or decreasing) those

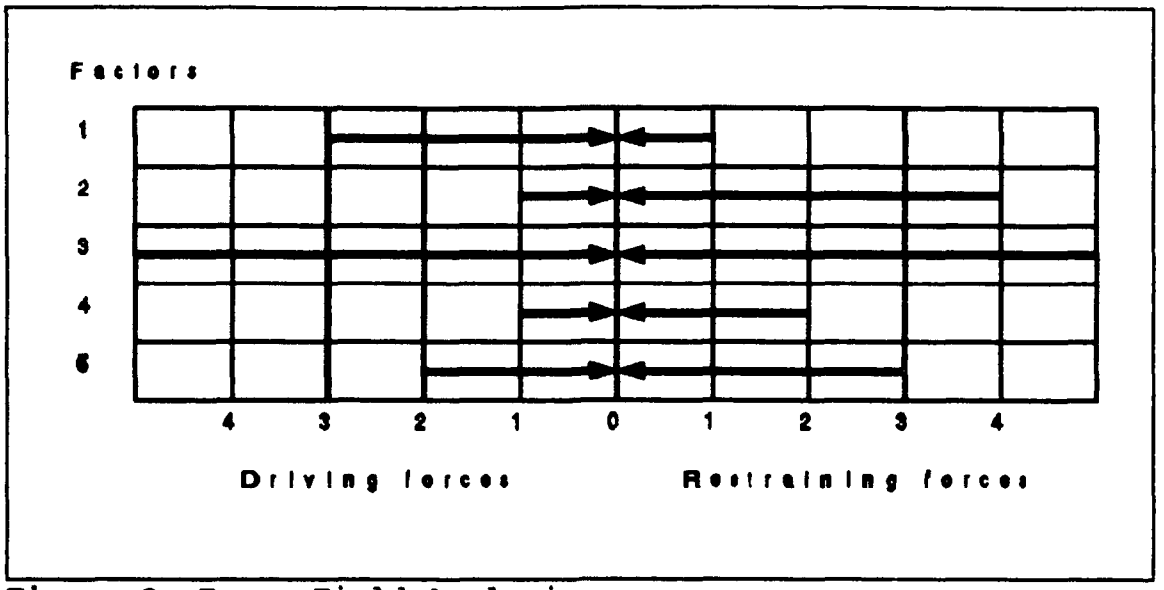

Figure 2 Force Field Analysis

forces maintaining the status quo. This resulted in less tension and subsequently less resistance than the strategy of increasing the driving forces for change.

The success of one strategy over the other in his research led Lewin to conclude that the process of a change consists of "transplanting the force field corresponding to an equilibrium at the beginning level by a force field having an equilibrium at the desired level." [Lewin, p. 32] This change in force fields required the three steps identified in Figure 1 earlier. In the first step, ***unfreezing***, the goal is the reduction of those forces which maintain an organization's behavior at the current level. This can be achieved best by communicating the need for change and providing supporting information which shows the differences between current behavior and that which is desired of organizational members.

In the second step, the shifting or ***moving*** of the organization's behavior to a new level, is achieved through the development of new behaviors, values, and attitudes. These are brought about by changes in the organizational structure and processes. Finally, the organization at its new level of equilibrium is then stabilized in the third step, ***refreezing***. Lewin noted, "Since any level is determined by a force field, permanency implies that the new force field is made relatively secure against change." [Lewin, p.35] This is accomplished through the effective use of supporting mechanisms, such as organizational culture, norms, policies, structures and reward systems, and by the removal of mechanisms that may impede organizational stability.

Lewin's force field analysis and change model were simple descriptions of the dynamics of the change process. His model gave form to the ambiguous forces constantly at work in a dynamic environment. Lewin's work is the basis from which more comprehensive understandings of change evolved.

b. The Planning Model of Change

The Planning Model, which was developed by Lippitt, Watson, and Westley (1958), expands Lewin's three steps into five phases. These phases are:

1) Development of a need for change (Lewin's unfreezing),

2) Establishment of a change relationship,

3) Working toward change (Lewin's moving),

4) Generalization and stabilization of change (Lewin's refreezing), and

5) Achieving a terminal relationship.

This model is an attempt to delineate the often overlapping phases of planned change from the perspective of a *change agent*, a professional consultant working with members of an organization.

The Planned Change model was later modified and refined by Kolb and Frohman for Organizational Development (OD) use.[Huse and Cummings] Kolb and Frohman articulated two principles critical to a successful change effort: First, that "all information must be freely and openly shared between the organization and the change agent", and second, "that information is helpful if and when it can be directly translated into action."[Huse and Cummings]

As identified in Figure 3, planned change involves a series of seven activities for achieving effective change in an organization. Briefly described, these are:

1. Scouting. In the first phase, the change agent and the organization jointly assess the resources available and explore potential solutions to the organization's problems. They also discuss the characteristics of the organizational system that necessitate attracting an outside consultant and make the organization receptive/unreceptive to change. The most important result of this preliminary assessment is the choice of a formal point of entry for the consultant in the organization's system.

2. Entry. Once the entry point of the consultant has been determined, a mutual contract defining if and how the succeeding stages of planned change will be carried out is negotiated. This is particularly important because it becomes

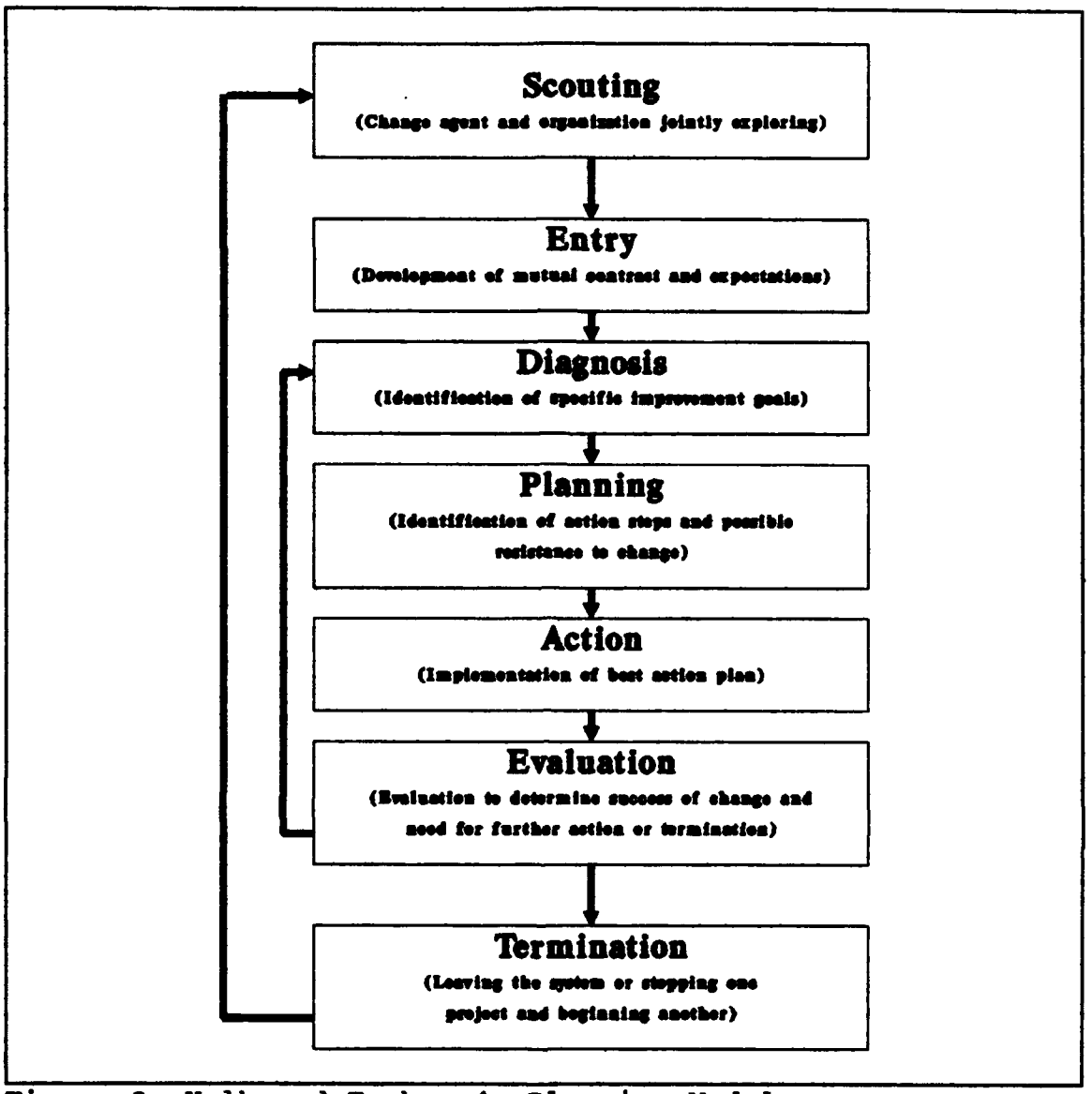

Figure 3 Kolb and Frohman's Planning Model

not only an agreement of mutual expectations, but also serves to define the consultant's sources of power for gaining the influence necessary to work effectively in the organization's system. This contract later can be renegotiated as the change process progresses and new information is gathered.

3. Diagnosis. This phase focuses on identification of the organization's perceived problem, its goals, and the resources of both parties for improving the situation. In evaluating the problem, related effects from change in one part of the system to other parts of the system can be anticipated. Operationally defining goals helps both the organization and

the consultant envision a solution to the problem and helps to place the problem in the context of the organization's total development. Finally, evaluation of individual resources helps both the organization and the consultant determine whether the organization is committed to the change and if the consultant is capable of meeting the organization's goals.

4. Planning. The formulation of desired behavioral objectives and strategies for change are developed here. By identifying the sources of power as well as organizational subsystems that will be affected by change, action steps can be generated that keep the subsystems in harmony and minimize the possible resistance to change.

5. Action. During this phase, the best change strategy developed previously will be implemented.

6. Evaluation. An integral part of the change process, this stage determines if change is meeting the desired objectives. The results of this stage determine whether the change project is terminated or returns to the diagnosis or planning stages for identification of new goals and plans.

7. Termination. One purpose of this phase is to underscore the fact that the relationship between the consultant and the organization is terminal. At the conclusion of the previous six phases, success or failure can be determined. While the goals outlined in the second, third, and fourth phases may have been achieved, thus signalling success, complete success of this process is evaluated on the basis of improvement of the organization's problem solving ability -- a major goal of the OD effort.

The planning models present a significant departure from Lewin's change process in that they often introduce the intervention of an outside agent of change for a behavioral science perspective. Also, they specifically acknowledge continuous diagnosis of all internal and external forces that affect an organization. This diagnosis is achieved through research and data gathering to ensure that hard evidence supports opinions and perceptions, and more importantly, action plans.

c. Beckhard and Harris' Change Management Process

While the Planning Model requires the intervention of an outside consultant, the Change Management Model gives an organizational leader a framework for bringing about change from within the organization. Beckhard and Harris introduced a three-phase model for managing the change process. This model, depicted in Figure 4, establishes the [framework] for organizational analysis. It looks first at an organization's future state, then its present state, and then logically calculates its transition state. According to Beckhard and Harris' plan, an organization should first define its goals -- what it wants to look like, function like, or accomplish. Next it must describe its present situation. The difference between these two states determines what changes are necessary and what needs to remain the same in order to reach the future state. This is the transition state. From analysis of these states, organizational leaders can start to develop strategies and action plans and prepare for managing this transition.

Beckhard and Harris do not see the strategies for achieving the desired change(s) and the management of the transition state as mirror images. While the first is concerned with identifying what must be changed (which are the relevant subsystems that will be affected, what is the organizational readiness, etc.), the second is concerned with intervention strategies that will help gain commitment to the plans being made. Briefly described, these include the

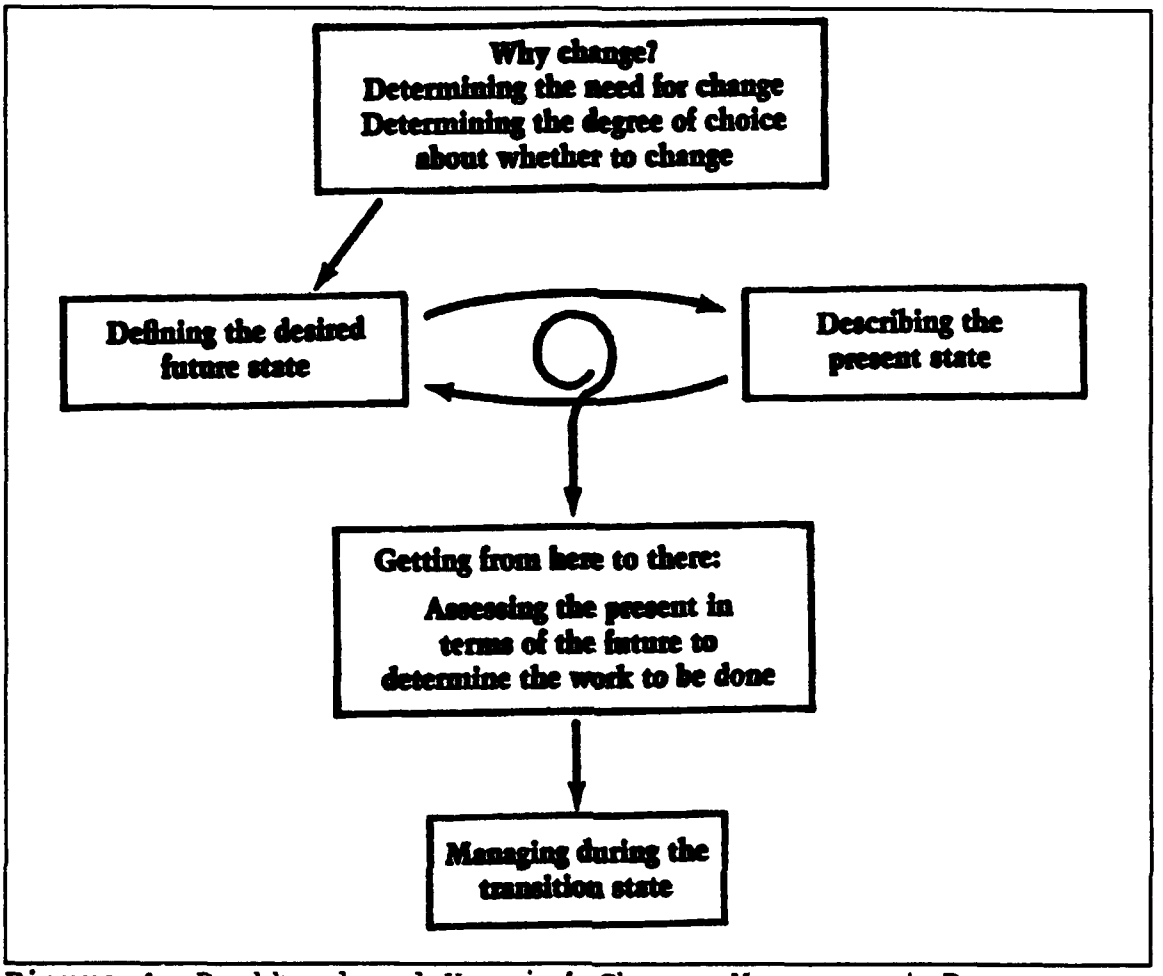

Figure 4 Beckhard and Harris' Change Management Process

following:

- Problem Finding -- Those concerned with change get together to identify and clarify all aspects of the problem. This assumes that the process of clarifying, as opposed to problem solving or action taking, will be unthreatening enough to encourage commitment.[Beckhard and Harris p.96]

- Educational Intervention -- In the classroom, all students are equal during class. They are all there to learn. Educational activities can help people understand a change problem and offer needed commitment.[Beckhard and Harris p.98]

- Resistance Management -- Leaders need to analyze resistance to change in order to work with it, reduce it,

and secure the needed commitment from the resistant party.[Beckhard and Harris p.98]

- Role Modeling -- Sometimes commitment for change from below can be achieved only by displays from above. By demonstrating this commitment in their personal behavior, norm setters provide role models for other members of the organization, demonstrating that "this change activity has priority; it is as relevant as our operating responsibilities."[Beckhard and Harris p.100]

- Changing Rewards -- Changing the reward system can be a powerful way to reinforce a change in priorities. The old reward system may, in fact, be inconsistent with the new state of affairs.[Beckhard and Harris p.101]

- "Forced" Collaboration -- Changes often require redefining roles, relationships, and desired behaviors within an organization. Bringing together the interacting parties for defining the optimum behavior of each of the roles allows a low-risk opportunity for cooperation of groups with vastly different biases toward the change.[Beckhard and Harris p.103]

Although this model appears almost as simple as the Lewin model, the processes involved make it, in fact, very complex. Similar to the consultant-based models, it requires a significant effort on the part of management to accurately diagnose the organization's weaknesses. The result of this effort, however, underscores for management the fact that attainment of priorities and goals means more than using a few simple levers to bring about change. On the contrary, the process of change is something to be considered and planned. Above managing structure, technology, and people, changes in the environment, in priorities, in relationships and roles, and in organizational culture must be managed as well.

d. Comparisons of Change Models

Lewin's change model was the first academic undertaking which focused on the general process of change. As a theoretical attempt to describe any type of change, it lacked the comprehensiveness necessary to prepare organizations for planning and implementing the often large scale changes that are necessary to address both internal and external pressures. Lewin's "unfreezing, moving, and refreezing" did become, however, the foundation for future change models that elaborated on these actions with intervention, diagnosis and evaluation. In contrast with Lewin, the models that followed recognized the process of change as happening in overlapping phases, as opposed to distinct steps. Each phase may not necessarily be complete before the process of the next one begins.

In terms of time and scope, the consultant-based models' planning method of change is a longer-term, more encompassing change approach meant to move the entire organization to a higher level of functioning. This is done by greatly improving the performance (and satisfaction) of organizational members.[Freeman and Stoner] Although consultant-based development frequently includes structural and technological changes, its primary focus is on changing people and the nature and quality of their working relationships. It is inherently more complex and consequently demands the expenditure of more time and money in

implementation. Beckhard and Harris' approach is similar in scope, yet it reminds us that management of change cannot be confined to a particular action plan for addressing a particular problem. The change process involves diagnosing and managing many more affected subsystems.

All three approaches to the process of change recognize that regardless of the type of change required to move from one step, phase or state to another, changing people's attitudes is a formidable task that requires special attention. The success of a change effort is not only dependent upon the quality and comprehensiveness of the plan, but also on the degree of acceptance by those who must implement the change and live with the results. Failure to recognize the importance of acceptance often derails many change efforts. Leaders, therefore, would be well served by having a better understanding of the process of resistance to change and what can be done to overcome it.

B. RESISTANCE TO CHANGE

"Resistance" is a common label given to an individual's or group's negative response to change. We often think of it as willful opposition to anything new, characterized by employee stubbornness, aggressive or hostile behavior, and obstinateness. In effect, we have come to see resistance as employees "pushing back" against the change or against those who have introduced the change. Typically, the counter-

response by management is to add more authority, force or persuasion to the change effort. Leaders sometimes forget that they too, at times, are resistors as well as instigators of change. As Paul Lawrence points out, "We are all involved on both sides of the process of adjusting to change." Yet regardless of our responses, changes will and must continually occur. Change is vital to progress.

How should we handle this change and corresponding incidents of resistance? Is this resistance justified? Is it a perpetual task of organizational leadership to force "change" down the throats of those not willing to accept it graciously? Is resistance a signal calling for further investigation by an organization's leadership? To understand how to best plan change and effectively deal with resistance, it is necessary to identify the true nature of resistance, the factors which may influence individual or group resistance to change, and the strategies which are most successful in overcoming it.

1. Three Theories on the Nature of Resistance

a. Early Works

The foundation of resistance to change theory is the classic work of Lester Coch and John R. P. French, Jr., "Overcoming Resistance to Change," published in 1948. Strongly influenced by the works and concepts of Kurt Lewin, Coch and French sought to identify the reason people resist

change so strongly and to describe what could be done to overcome this resistance. At the Harwood Manufacturing Corporation, where workers' resistance to the necessary changes in procedures created serious production problems, Coch and French devised a preliminary theory to account for this resistance and set up an experiment to test their hypothesis.

Coch and French evaluated the worker's problems and attitudes toward change using Lewin's "force field" analysis. Identifying what Lewin would categorize as the driving and restraining forces, they noticed that the strength of each force increased with increases in levels of production. In other words, as workers became more proficient, these forces became stronger. The combined strength of these ever-increasing, opposing forces increased worker frustration. Further analysis at various production levels showed that "the motivational forces induced in the individual by a strong sub-group (their co-workers on the production line) may be more powerful than those induced by management".[Coch and French, p.20] These observations became the basis for Coch and French's preliminary theory: "Resistance to change is a combination of an individual reaction to frustration with strong group induced forces."[Coch and French]

Interpretation of the results of their experiments led Coch and French to draw a number of conclusions on the nature of change that supported their theory. First, opposing

forces lead to resistance as a result of the frustration caused by the conflict of these competing demands. The Harwood case showed, for example, that the driving forces (production goals, pressures induced by the management, and a group standard of competition) and the restraining forces (the difficulty of the job, avoidance of strain, and a group standard to restrict production to a given level) created an internal conflict that workers responded to by either aggressive behavior toward each other or by escape (submitting to the change or quitting). Second, aggressive behavior is often more a rejection of management induced forces than resistance to change itself. Induced forces, such as management pressure to produce more, will propel a person in the desired direction, *only if the induced forces are accepted by the targeted individual/group.* Third, group induced standards affect recovery from change the most. Deviation by an individual from the group standard increases the pressure brought to bear on the group as a whole. This deviation, in turn, increases group pressure on the individual to conform. Finally, effective communication of the need for change and group participation in planning the changes offer the best strategy for greatly alleviating, if not removing, group resistance to changes in policies or procedures.[Coch and French]

b. Resistance as a Response to Social Change

Shortly after Coch and French published their theory on resistance to change and their prescription for overcoming it, Harriet O. Ronken and Paul R. Lawrence completed a study on administering changes in a factory setting.[Ronken and Lawrence] Although their interest in resistance was secondary in their research, their observations led them to very different conclusions about the nature of resistance than Coch and French. Lawrence later published these findings separately.[Lawrence]

Lawrence noted that while two changes may be similar or identical in their technical aspects, they can be very different in their social aspects. A technical aspect of a change would be, for example, the modification of the physical routines of the job -- a transfer to a new line, a new procedure, etc. A social aspect of a change would be how those affected by the change presume it will modify their established relationships in the organization -- changes in status, personal or professional respect, control, etc. In the individuals studied by Lawrence and Ronken, the technical aspects of the changes being introduced were very similar. However, there was a noticeable difference in how the industrial engineers who introduced the changes communicated with the operator who would be implementing the change and experiencing these changes on a social level.

In the first episode, an industrial engineer introduced a technical change yet sustained his customary relationship with the operator, treating her as a person who possessed valuable skills and knowledge. In this case, technical change had been introduced, but the social relationship between the engineer and the operator, as well as how the operator viewed herself in relation to the organization, stayed at the same positive level. In the second episode, a new engineer introduced another technical change. This time, however, the new engineer treated the operator in a brusque manner, leading her to believe that her usual work relationships were being challenged.

	Change		
	Technical aspect	Social aspect	Results
Episode 1	Clean part prior to assembly	Sustaining the customary work relationship of operator	1. No resistance 2. Useful technical result 3. Readiness for more change
Episode 2	Use new part in assembly	Threatening the customary work relationship of operator	1. Signs of resistance 2. No useful technical result 3. Lack of readiness for more change

Figure 5 Two contrasting patterns of human behavior

Figure 5 represents the two contrasting patterns of human behavior that Lawrence observed. Lawrence believed that the significantly different results had been determined by how the customary social relationships had been handled. "The nature and size of the technical aspects of change," he concluded, "did not determine the presence or absence of resistance nearly so much as does the social aspects of change." [Lawrence, p.166] Additionally, he believed that, reevaluated in this light, the studies of Coch and French tended to confirm his findings. The frustration Coch and French attributed to the clash of opposing forces resulted instead, Lawrence believed, because social considerations were ignored when changes in the workplace were implemented.

c. Resistance as Autopoiesis

A third theory on the nature of resistance is offered by Jeffrey Goldstein. Rather than defining resistance as a *negative force* that must be dealt with before change successfully can be implemented, he thought resistance should be viewed in an optimistic light. Applying ideas from physiology and information theory to individual and organizational behavior, Goldstein described resistance as a *survival mechanism* when change is perceived as an organizational threat.

Goldstein first introduced the term *autopoiesis*. This term actually comes from biology, where it was created to

explain how a living system survives as an autonomous identity even though its components are in constant exchange with the environment. For example, our body is full of equilibrium seeking organs (liver) and organizations (glands) that resist any changes that threaten the body's survival. The organization of our body allows us to adjust internally to the outside environment. It also allows us, however, to seek to limit any changes in the environment that threaten its well-being. In essence, our bodies are autopoietic because they resist any changes that may change the internal organization's ability to function properly and assure our survival.

This term, Goldstein thought, could be applied to a group of people organized for any purpose. When a social group is organized in an autopoietic manner, the group has a self-referential closure and is not adaptive to environmental changes. When subject to a change effort, an autopoietic group automatically will resist change. Since the group's identity is based on a set of fixed assumptions about the environment that support the status quo, attempts to change will only stimulate the survival mechanisms of the group to stay the same. Thus the autopoietic group will resist changes that are perceived as a threat to the assumptions and behaviors that are associated with the group's identity.[Goldstein] Put simply, an organization has a set of assumptions about the range of its environmental possibilities. It organizes itself and its responses to

maintain this particular range. If the organization encounters a change that is not within the range of possibilities or preplanned responses, it will attempt to minimize if not deny the environmental fluctuations and resist any change in its mode of organization. "Therefore, from within the context of autopoiesis, change is unthinkable and resistance is unchangeable."[Goldstein] If this is the case, resistance should not be regarded as willful myopia. Instead, resistance to change is an example of a human mechanism to ensure survival. The important point may be that resistance, in light of this theory, can be viewed as necessary to support the organization. The management challenge becomes one of challenging that survival-oriented resistance to changes that are demanded by the environment.

2. Reasons for Resistance

There are a myriad of interpersonal, technical and organizational reasons cited in the literature for individual and group resistance to change. The following reasons are commonly noted:

- *Personal Loss.* People are afraid that changes will require them to lose something of value. This may or may not be a justifiable fear. However, job security, money, pride and satisfaction, self esteem, friends and important contacts, freedom, responsibility, authority and good working conditions are all common examples of potential losses that may drive these fears.[Kirkpatrick, Daniel, Snavely]

- *No Need For Change.* Many people strongly support the stability of the status quo and consider changes unnecessary. This may be a result of a simple lack of

understanding of those forces necessitating change or of the benefits of change to either the individual or the organization.[Kirkpatrick, Daniel, Lawrence]

- *Change Will Create More Harm Than Good.* This perception is often held by people at the lower echelons of an organization when they feel that changes are being pushed from above by leaders who do not possess an adequate understanding of the processes involved at the bottom.[Kirkpatrick]

- *Manner of Communication.* Changes introduced without adequate detail or explanations which do not convey in understandable terms the necessity of the changes and corresponding benefits often create an emotional atmosphere charged with negative feelings toward those implementing the changes. Workers may be unable to identify their contributions to the change. Some, who formerly performed their jobs with understanding and satisfaction, may be forced to perform with confusion and apprehension. Others are sensitive to hearing about changes secondhand.[Kirkpatrick, Lawrence, McMurray]

- *Receptivity to Suggestions.* Implementors may fall into the trap of identifying themselves with the change and thus feel threatened by suggested modifications to the plan. This unreceptiveness in turn may be identified mistakenly as a lack of personal or professional respect for those who made the suggestions.[Lawrence]

- *Timing of Change.* Changes introduced without regard to timing or impatient expectations of how long a change should take to be implemented cause stress in customary work relationships and may be resented.[Lawrence]

- *Negative Attitudes Toward Change.* Individuals or groups may have negative attitudes toward their jobs, their boss, or their organization that affect their receptivity to those introducing change or to the change itself. Group pressures strongly influence this factor of resistance. [Coch and French, Kirkpatrick]

- *No Input.* Implementors of change often overlook those people with the ability to identify technical problems as well as be able to identify undesirable social consequences. Employees may consider themselves professionally skilled and responsible for current organizational successes. Failure to tap this knowledge usually leads to resentment caused by a loss of pride or self esteem or feelings of little respect for past accomplishments.[Lawrence, Daniel]

- *Personal Criticism.* Many people are concerned that changes are initiated as a result of the failure of past personal performances. Changes may, in fact, expose individual or organizational inefficiencies that they fear will come to the attention of management. This concern is often associated with those who have identified themselves with current procedures through project or procedure development or support. Change, in this case, attacks their "ownership."[Lawrence, Manz]

- *Challenge to Authority.* Change may be the object of a test of power and influence. Refusal to change or comply with change can be used by either seniors or subordinates to remind the other of just who is really in charge. [Kirkpatrick]

- *Change Requires Effort and Creates Burdens.* Changes may add more work and correspondingly result in confusion, mistakes or other negative results. People are also concerned about having to upgrade old skills, learn new processes, and/or devote more time to the job.[Mealiea, Snavely]

- *Loss of Control.* Some people do not resist change itself, but resist change which originates from an outside force; they resent *being changed.* A simple, but forced, change may meet resistance for no other reason than people resent not being in control over what is happening to them.[Lawrence, Snavely]

3. A Mathematical Conceptualization of Resistance

In an attempt to add a quantitative dimension to the study of the process of change, Richard Beckhard and Reuben Harris developed the following mathematical framework for determining the likelihood of individual/group responses to change:

$$C = [ABD] > X$$

where C = Change
A = Level of dissatisfaction with the status quo
B = Desirability of the proposed change or end state

D = Practicality of the change (minimum risk and disruption)
X = "Cost" of changing

The value of the change, as determined by the product of Factors A, B, and D, must outweigh the perceived costs (X) in order for change to occur. If the cost of changing is too high or the value of the change too low, individuals/groups will resist the change.[Beckhard and Harris, p. 98] H. J. Reitz thinks the equation for resistance is even more simple. Resistance to change equals "the uncertainty that one will be as satisfied after the change as before, plus the effort perceived as necessary to learn how to cope with the new system."[Reitz, p. 545] In this view, resistance is not an idiosyncratic response by an unpredictable person, but a calculated, rational response based on past experience.

4. Factors Influencing Resistance

The reasons why people resist change are multifaceted. Many of them can be weakened if not completely overcome by assessing planned changes from the perspectives of affected personnel. Asking the questions that they might ask will help a leader to better plan and manage the processes at hand. "Will my old skills become obsolete?" "Will I lose my job?" "Will I be able to perform as well under the new system as I did under the old system?" "Will I have to work longer hours?" "Will I still be in charge?" As Lawrence noted also, resistance may also be "caused by certain blind spots and

attitudes which staff specialists have as a result of their preoccupation with the technical aspects of new ideas."[Lawrence] Leadership's self-evaluation and attention to subordinates (who may be implementing management's plan) are equally important for eliminating what may become the roots of resistance caused by the implementors themselves.

The multitude of reasons why people resist change would suggest that many are learned responses based on past experiences. However, studies of resistance to changes in information systems found relationships between support for change and employee concerns for their individual needs. Flicker, for example, found that individuals low in self-esteem resist change more that those with higher self-esteem.[Flicker] Faunce found that higher social background, higher levels of education, and higher positions within an organization were associated with more favorable attitudes toward change.[Faunce] Collins and Mann concluded that a positive relationship exists between the needs of individuals and the intent of the individuals to behave in support of the change. People are more positively disposed toward change when they perceive personal benefit. Similar to Coch and French, Collins and Mann also noted a positive relationship between favorable group norms toward the change and individual group member's intention to support change.[Collins and Mann] Finally, Steiber found that perceptions of "fair treatment" of

displaced workers (retraining or relocation as compared to being fired) resulted in a greater likelihood of favorable employee responses to a change.

5. The Manifestations of Resistance to Change

> Even ordinarily honest and loyal workers and executives will sometimes lie, misrepresent, and engage in outright sabotage of the new procedures, so bitter are the antagonisms aroused."[McMurry]

In the studies evaluating resistance to change in factory settings, it was not uncommon that efforts were made at all levels to either block the introduction of the change or to discredit it after its implementation in order to force its removal. Resistance manifests itself in a number of different behaviors. Caruth differentiated how people displayed their resistance by noting that their behavior could be either overt, or covert.[Caruth] Bitterness, grievances, reductions in output, absenteeism, increases in the number of requests for transfers, and turnover are examples of individual overt responses commonly experienced. Among groups, aggression toward management, chronic quarrels, and slowdown strikes are further examples of this type of resistance.

While an individual may agree with the change in principle, he/she may also resist actual implementation. Attempts may be made to inhibit the spread of a change by attacking a plan indirectly. The expression of numerous pseudo-logical reasons why a particular change will not work

is an example of covert resistance. Rumors, unwillingness to commit adequate resources to make change successful, lack of openness, and "hidden agendas" are other examples ways employees consciously or unconsciously sabotage a change effort. Whether resistance is overt or covert, it can result in significant expenses of time and money to any organization that is not first prepared to deal with it and include plans to minimize it.

C. RESISTANCE TO TOTAL QUALITY MANAGEMENT/LEADERSHIP

> With respect to the movement known as [TQM], federal managers can be divided into three groups; those who have jumped on the bandwagon, those who are tired of hearing it discussed in seemingless endless detail in seminars and hope it will go away, and those who still have no idea what it is.[Shoop]

This scenario makes clear the importance of understanding individuals' fear of change and possible objections to TQM philosophy. Only with this understanding can these concerns be addressed directly so that TQM is introduced effectively. In reaching out to the third group described above, "those who still have no idea what it is," it is essential not to allow potential supporters to lapse into the second group, the objectors. It is crucial that people's first encounter with quality philosophy be positive, engaging the individual's interest without threatening his/her familiar world. Fear of change can sabotage the implementation of even the most

sensible program, and this very obstacle faces current TQM/TQL progress within the DoD.

Similar to Lewin, Coch and French, and others that advocate using force-field analysis for organizational prognosis, David Carr and Ian Littman described the forces acting for and against the implementation of TQM in government organizations. They believe that the driving forces are top leader support, recent loss of work to private contractors, success of TQM at partner agencies, employee empowerment, and strategic planning. The restraining forces against TQM implementation are some middle management resistance to the changes required, complacency among units, failure of previous attempts to implement other quality programs, fears of job loss if productivity increases, and the observations that plans tend to sit on shelves. Carr and Littman also advocate finding strategies that weaken and remove the forces opposed to TQM and reinforce forces in favor of TQM change.[Carr and Littman]

Like the authors mentioned earlier who address the issues of resistance to structural, technological, attitudinal and behavioral change, Carr and Littman similarly categorize the reasons why people in general resist TQM change. They describe three general factors:

- Fear. A natural human reaction to uncertainty is fear. Some people undoubtedly will be asked to learn new skills while others will have to adjust to the shifts in communication patterns, organizational structure,

influence, authority and control that accompany this change.

- Resentment. Some changes will be imposed from without. Nobody likes being ordered to comply. Implementing TQM requires effort on the part of middle level leaders and managers who are already busy. Others will resent this effort as another improvement program that ultimately will fail for lack of support. Still others have been around long enough to remember being *ordered* to participate in strategic planning, statistical process control, or quality circles.

- Technical considerations. Most people can, and reserve the right to, evaluate an innovation on its technical merits and determine if it will make their work better.[Carr and Littman, pp.168-169]

While this fear, resentment and reservation about the technical benefits of TQM change are not uncommon individual responses to other types of change, some of the responses to TQM appear to be linked to hierarchial position. Resistance to TQM often is attributed to specific groups, especially supervisors, middle and top management. Many people at these levels object to the implementation of TQM on the grounds that their organization has a unique way of doing business, that employees are too individualistic, or that TQM does not work in a government environment.[Carr and Littman]

Johnson found in interviews and a survey of TQM coordinators in business and government that top management was often responsible for resistance in spite of their own efforts to implement quality programs. While they stood behind the full implementation of TQM, they eventually would devalue the effort by falling back into the management style

that they had been practicing for years. Top management was also guilty of breeding resistance among middle managers by failing to spend adequate time with their subordinates demonstrating the need for change, involving them in the planning for necessary changes, or ensuring effective training of them. Middle managers, on the other hand, were found to resist TQM because they believed that there was no need to change, because they felt excluded from the planning of the change, and because they were concerned that their management style was no longer appropriate or compatible with TQM principles.[Johnson]

In a similar vein, a survey by the Conference Board, a business research organization, found that "only a quarter of the respondents report they can count on strong support for TQM from middle managers and first-line supervisors." Suggested reasons from the respondents for this resistance: (1) Many firms tie reward and promotion to the bottom line, not quality. (2) Managers complain of quality tasks added to their already full work loads. (3) They believe that they already produce quality work.[HRM]

In contrast to the objections to TQM techniques often expressed by those potentially affected by change, some professionals call attention to legitimate managerial concerns to TQM implementation. Juran simplifies the arguments of managers in organizations contemplating or undergoing a transition to TQM/L into three broad groups:

- TQM/L adds to the workloads of all (organizational) levels
- It disturbs the established organizational culture
- The change is a lot of work

> Many upper managers are not enthusiastic about devoting the time needed to take such actions. It would be much simpler if they could somehow set broad goals to improve quality planning and then delegate -- that is stimulate their subordinates to meet the goals. That approach has been tried. It has failed because the prevailing ways of quality planning are so completely woven into existing fabric of company activities. The leadership change must come from upper managers.[Juran]

The technical objections voiced by upper and middle managers are indicative of the contemporary mindset of American corporate culture. These attitudinal barriers must be distinguished from legitimate time/cost barriers. It is the task of the implementers of TQM to diagnose and manage these obstacles early and decisively.

The implementation of the TQM/TQL philosophy is a change that requires discarding many of the "old" ways of doing things. It will require changes in top leadership emphasis, organizational structures, goals, orientation, responsibility for quality, vision, inspection requirements, and most importantly, changes in people's attitudes. It is crucial for the implementers of a new quality program to discern the true nature of the complaints lodged against TQM/L. The intention of the survey constructed for this research is to identify the possible sources of resistance and the places where the strongest resistance may be located. In light of the research

findings, strategies for overcoming this resistance will be presented later in the discussion and conclusions.

III. METHODOLOGY

A. SUBJECTS

The subjects for this research were Marine students and staff members of three schools of the Marine Corps University (MCU) located at the Marine Corps Combat Development Center, Quantico, Virginia. Marine Corps University was chosen primarily because the students of its individual schools were not members of particular commands. They would not, therefore, have reason to possibly fear being candid about particular opinions. Also, due to the number of schools at MCU, a broad cross-section of ranks could be surveyed.

A total of 338 Marines completed the prepared questionnaire. The groups surveyed represented the Art of War studies group and staff of the Command and Staff College [Lieutenant Colonels], Command and Staff College Class of 1991-1992 [Majors], Amphibious Warfare Course 1992 [Captains], and the Staff Noncommissioned Officers Academy Career Course 6-91 [Staff Sergeants]. Although surveying Corporals and Sergeants at the Noncommissioned Officers Course, and Gunnery Sergeants, Master/First Sergeants, and Sergeant Majors/Master Gunnery Sergeants at the Senior Staff Noncommissioned Officers Courses was intended, these courses were not in session and

sufficient numbers of staff members of these ranks were not available at the time of data collection.

B. SURVEY INSTRUMENT

A questionnaire was developed specifically for this study. The items developed for the questionnaire were based on a comprehensive review of literature examining individual reasons why people resist change in general, and on Total Quality literature detailing the different types of changes that quality initiatives will require. In embracing Total Quality Leadership, the Department of the Navy has used W. Edwards Deming's "***Fourteen Points***" as the foundation for program and curriculum development. The material, books and periodicals dealing specifically with Deming's philosophies, as well as interviews with the instructors of the Navy's Senior Leadership Seminar, were used as a basis to identify required quality initiative changes to the philosophies, values and organization of the Marine Corps. Using examples of changes required by thirteen of Deming's points, questions were formulated that could best provide a comparative analysis of Deming's principles with current Marine Corps practices, values, or generally held beliefs. Examples of Deming's ***Point Four*** ("End the practice of rewarding contracts on the basis of price alone") were omitted due to the organizational structure of the Marine Corps and the inability of the majority of

Marines to choose their suppliers for particular products or services.

1. Construction

An initial list of over 150 questions (not including demographics) were categorized by Deming's points. These were then reviewed for face and content validity by faculty members and instructors with expertise in the areas of change, Total Quality Leadership/Management, and survey design. As a result of the review, items were eliminated if they were thought to be redundant, not applicable to the Marine Corps, required an understanding of quality principles by the respondents, or were unable to be asked in such a way that the possible answers could be quantified and evaluated accurately. A total of 28 questions on generic change and 60 questions on Total Quality change were chosen for the final questionnaire. The survey scales and questions for both portions of the survey are found in Appendix A. The actual survey provides a detailed frame of reference for these two groups of questions and excludes the category labels. It can be found in Appendix B.

2. Pretesting

After the final round of academic evaluations of the questionnaire, the questionnaire was formally pretested on a sample of 10 Marine NCOs, SNCOs, Captains and Majors. During post-test interviews with this very small sample, the

respondents were asked to comment on the appropriateness of the individual questions, their ease of comprehension, and the changes they believed could improve the wording of questions with which they had trouble. This pretesting process was an effort to ensure that (1) the directions and individual questions could be understood by the respondents, (2) that knowledge of "change" and/or total quality principles were not prerequisites to their understanding of the questions asked, (3) the questions were not asked in such a way as to bias individual responses in a particular direction, and (4) that the questionnaire could be completed by the respondents in the time allotted for data collection by the individual MCU schools.

A final set of questions concerning demographics was then added to the original 88, expanding the survey to 105 total questions. Questions concerning rank, experience and military occupational specialty were included specifically to identify any group characteristics that may be beneficial in Total Quality Leadership curriculum development at the Marine Corps University. Questions concerning education, personal assignments and definitions of specific terms were included for other comparisons and analyses.

3. Survey Validity

The validity of any measurement instrument refers to the degree to which it measures what is intended to be

measured. Of the three types of validity generally evaluated (content, construct, and criterion-related), this survey only attempted to establish content validity. That is, the validity of this survey depends on how well the questions cover the content domain of resistance to generic change and resistance to change brought about by acceptance of Deming's quality principles. Since the selection of questions was based on a review of literature as well as evaluations by academicians within these fields, it can be argued that content validity was established.

C. LITERATURE REVIEW

An exhaustive review of current change literature and total quality literature was conducted for the purpose of survey design. A single source could not be found that had previously attempted to measure resistance to generic change. Further, no single source could be located that dealt specifically with measuring resistance to total quality change. Lacking either, it was necessary to return to the literature of each subject and draw examples of types of changes and reasons for possible individual resistance.

Both manual and computer searches of books, periodicals, reports or other materials held by the Naval Postgraduate School, by local and regional libraries, and by other Northern California academic libraries were conducted. From these searches, abstracts and bibliographies were obtained for

resistance to generic change and TQM/L change. The manual searches primarily were in the card catalog system, the Reader's Guide to Periodical Literature, and Psychological Abstracts. The following computer databases were also searched:

- Semi-Automatic Bibliographic Retrieval System (SABIRS)
- Applied Science & Technology Index (ASTI)
- Defense Technical Information Center (DTIC)
- OCLC Online Union Catalog (FirstSearch)
- Old "key word" database searches currently held by the Naval Postgraduate School library. These included Change and Resistance (1979 and 1980), MIS Resistance to Change (1980), Total Quality Management/Leadership (1989), and Organizational Change Planning (1981).

D. DATA COLLECTION TRIP

The questionnaire was administered to 338 Marines. Of those participating, approximately 107 were Staff Sergeants, 96 were Captains, 111 were Majors, and 17 were Lieutenant Colonels. One Gunnery Sergeant, one Master Sergeant, one Sergeant Major, one Second Lieutenant, and one Colonel also responded to the survey. Two respondents did not identify their rank. These sample groups represented approximately all of the Staff Noncommissioned Officers Career Course, 50% of the Amphibious Warfare Course (1992), 57% of the Command and Staff College class, all of the Marine officers of the Art of War studies group, and 85% of the staff of the rank of Lieutenant Colonel at the Command and Staff College. Other

demographic data describing these groups can be found in Appendix C.

In administering the survey, several steps were taken to ensure that the respondents would not feel pressured into answering the questions in a specific direction. Every attempt was made not to discuss Total Quality Leadership before or during the survey administration or allow the questionnaire to be identified with TQL change efforts. This was done in an attempt to prevent the respondents from biasing their answers based on their preconceptions or understanding of TQM/TQL. Further, the respondents were requested to leave the name and identification number sections of the survey blank as proof that the value of their responses was in the aggregate of their group and that individual responses would not be attributed to them at a later date.

E. DRAWING CONCLUSIONS FROM THE DATA

1. Methods of Analysis

In identifying the incidence of resistance to TQL change among individuals in the military -- the primary research question -- this analysis evaluates the results (means and standard deviations) of the survey responses by subjectively comparing them to the literature supporting Deming's philosophies and to interpretations of how a TQM/TQL advocate would respond to the survey questions. For example, if all survey subjects respond to a survey point in a manner

that contradicts the probable response by a TQM advocate (as described in the literature), then resistance to this particular change is assumed. Where a majority of the responses to a particular Deming "point" suggest broader resistance, resistance to the principle that the statements represent will be assumed.

In answering the secondary research questions, statistical analysis is used. First, all responses are categorized by rank and subjectively evaluated in a manner similar to that used in identifying resistance in the primary research question. Then, to identify the possible basis for this rank-group resistance, the responses to the individual questions identified as demonstrating resistance to aspects of TQL are correlated with the group responses to questions 1-28 (the part of the questionnaire which evaluates factors that influence an individual's willingness to be committed to change in general). This statistical analysis indicates whether there are differences by rank in the types of resistance identified and highlights which factors may influence this resistance.

2. Use of Opposing Scales and the Affects on Analysis

Two different Likert scales are used in the survey. The first scale, used in parts one and two of the survey, allowed the respondents to rate individual importance of certain types of items to their commitment to change in

general (part one), and also rate the degree to which loss of certain items would influence personal commitment to change (part two). This scale ranged from 1 (very low) to 5 (very high). The second scale, used in part three of the survey, asked the respondents to rate the degree to which they agree with the question from 1 (strongly agree) to 5 (strongly disagree). The reversed direction of these scales was a result of pretest interviews in which those who just completed the survey expressed a preference for this rating system. This reversal, however, makes it inherently difficult to evaluate correlation coefficients. In the analysis of the data (Chapter IV), the reported signs (- or +) of the coefficients will appear to contrast with the conceptual explanation of the relationships identified. Special attention must be given to the fact that as a result of the opposing scales, negative correlation coefficients do not necessarily mean negative correlation. The conceptual explanations given make the proper adjustment.

IV. SURVEY DATA AND ANALYSIS

A. COMPILATION OF THE DATA

The broad scope of changes inherent to the introduction and implementation of TQL required a lengthy survey. For this reason, the respondents were asked to mark their answers on computer graded response forms. Following the compilation of all subjects' answers, the data were analyzed using SAS® statistical analysis software. Procedures providing graphical presentation of the data as well as tests of statistical significance were used. These were the PROC UNIVARIATE, PROC CORR and PROC FREQ/CHISQ commands respectively.

B. METHODS OF ANALYSIS

1. Logic

As noted in the methodology, identification of the incidence of resistance to TQL change efforts is based on an analysis of summary statistics (mean and standard deviation). This analysis gives a general approximation of the survey sample's collective attitudes toward a particular change and highlights which sources of resistance may be barriers to the successful introduction and implementation of the TQL philosophy.

To identify differences in distribution of responses by rank, methods that compare the proportions rather than the

frequencies within each group were required. This was particularly important since the sample sizes for each rank were different (i.e., Staff Sergeants (N=107) and Lieutenant Colonels (N=17)). The frequency of a particular response to a question by one rank legitimately cannot be compared to the frequency of the same response by another rank unless the sizes of the two groups are controlled. Therefore, a measure must be used that compares percentages, not raw numbers, of a particular response.

By using a box plot [or schematic plot] for a graphical summary of the data, it is possible to identify the individual range of answers by different ranks using the same scale. This procedure specifically identifies the location of the *interquartile*, or the middle fifty percent of all responses. In the figures listed hereafter, this is represented by the "box." The bottom and top edges of the box are located at the sample **25th** and **75th** percentiles, while the center horizontal line (*----*) is drawn at the sample median, and the central plus sign (+) is at the sample mean. The length of the box indicates the degree of variance in responses across the choices on the Likert scale. Vertical lines, called *whiskers*, extend from each box as far as the data extend, to a distance of 1.5 interquartile ranges. True outliers to the sample distribution of the responses are marked with either a zero or with an asterisk (*) depending on

their relative location. [For a more detailed explanation about this plot, see Tukey.]

The value of this method of analysis is that it allows differences in response ranges to be identified. The length of the interquartile range (box), its location, and the location of the mean and the median give a general impression of the suspected degree of strength and inclination of aggregate (group) attitudes toward particular statements.

In contrast to this type of graphical analysis, statistical analysis is also used to confirm the response differences between ranks, and to identify the possible basis for this resistance (the secondary research question). The χ^2 (chi-square) test is used to identify whether or not a statistical association between cross-classified attributes (e.g. rank and response) exists. The test assumes that the null hypothesis [that there is no difference in the distribution of responses between groups, i.e. ranks] is true. A value is then calculated based on the difference between the number of actual responses and the number of expected responses in each box of the cross tabulation table (if the null hypothesis were true). If the chi-square value is large according to the degrees of freedom, then the null hypothesis is rejected and evidence of differences between groups is supported. This test also gives a probability value that demonstrates the level of statistical significance of the chi-square value. For the purposes of this data analysis, the

probability value must be .10 or smaller to conclude significant statistical association.

The value of the chi-square test is that it distinguishes differences in the response proportions. For example, means of 3 (neutral) of two group responses to the same question may suggest that both groups feel open-minded toward a particular change. Further, the interquartile range may be in the same location, thus confirming the earlier conclusion. However, the size of one interquartile range may be somewhat smaller. While proximate interquartile range location, means, and median may suggest that these groups feel the same way about a particular statement, the chi-square test will tell whether this difference in size indicates that one group actually is impartial, while the other group may have strong biases in both directions (strongly agree/strongly disagree).

The next step in the analysis is to attempt to identify factors that may influence the significant types of resistance demonstrated in the initial analyses described above. To do this, the questions showing differences in attitude toward TQL by rank using boxplot analysis are statistically correlated with the frequencies of group responses to questions 1 through 28, which identify factors that affect a person's willingness to accept change in general. By comparing the correlations of the ratings of each TQL concept with the individual factors that affect a person's

willingness to accept change in general, an understanding can be gleaned of the important influences which may be related to an individual's compulsion to resist specific TQL ideas. In other words, correlations between important reasons for being committed to change in general and attitudes toward TQL could support conclusions about the reasons TQL is resisted. Since there is no standard for identification of "good" or "significant" correlation coefficients in this type of research, only those correlation coefficients that show statistical significance at more than the .10 probability level will be discussed.

2. Reporting

The large number of questions and variables prohibit the reporting of all responses and frequencies. In answering the primary research question, only specific means and standard deviations are presented. The means and standard deviations for all questions are given in Appendix D. In answering the secondary research questions, only the box plots and results of the corresponding statistical tests that indicate possible resistance are reported. A complete presentation of these results, including frequency tables of responses to these questions, their chi-square values, and corresponding correlation coefficients and their probabilities is given in Appendix E.

C. DATA

1. Mean Ratings of Sources of Resistance to Change

A means analysis of the data was conducted to identify the population (all subjects) means and standard deviations to all questions. This provides an overall indication of general attitudes toward TQL and the sources of resistance to change. Listed in Appendix D are the means and standard deviations of the responses to all questions. As noted in the methodology, questions 29-88 are arranged by the Deming *point* which they represent.

This means analysis tells a number of things about the survey sample. In part one of the survey, respondents rate "possible loss of job satisfaction" (question 1, mean = 4.19) the most important determinant in their personal commitment to a change. This factor is followed by "I am not allowed input into the change effort" (question 12, mean = 3.73), "I am told what to do but not why" (question 10, mean = 3.60), and "I resent hearing about changes secondhand" (question 18, mean = 3.58). Of lowest importance among the factors listed in part one is "Change becomes an opportunity for others to challenge my authority" (question 17, mean = 2.41), "There is usually no need to change" (question 5, mean = 2.56), "In the short term, change will create more harm than good" (question 6, mean = 2.74), and "I may have negative attitudes toward my job, organization, or my boss" (question 11, mean = 2.86).

Section two of the survey sought to identify the degree to which certain types of loss would influence an individual's commitment to a change. Highest overall among the types of losses are responsibility (question 23, mean = 4.19), pride (question 19, mean = 4.16), and authority (question 24, mean = 3.89). Rated lowest overall among these types of losses are important contacts (question 27, mean = 2.54), friends (question 26, mean = 2.99), and status (question 28, mean = 3.02).

Encouragingly, in section three of the survey the responses to questions which described examples of TQL changes to the present Marine Corps environment did not show consistent patterns of means. This fact indicates a general level of support for the changes mandated by Deming's principles. A similar analysis of section three is also done by rank subgroups. Correspondingly, a pattern that would suggest that the sample ranks have objections to the Deming principles themselves, as opposed to only individual examples of change encouraged by the principles, is not found.

When a similar means analysis of section three is also done by rank subgroups, it appears to explain much of the variance. Taken individually, however, questions 58, 67[1], 71,

[1]Question 67 was eliminated from analysis due to the many questions asked concerning this question and two others (65-66). Many of the survey subjects did not feel qualified to accurately evaluate technical manual work standards that they felt were outside the realm of their familiarity and immediate charge.

72-75[2], 80, and 81 do display means in directions inconsistent with the philosophies advocated by TQM/TQL authors and champions. These responses, which indicate some degree of resistance to a change initiated by the implementation of TQL, will be discussed further.

In evaluating the survey responses one by one, nine questions showed possible resistance by one or more rank subgroups. These were questions 30, 40, 41, 42, 44, 58, 71, 80, and 81 respectively.

2. **Subgroup Comparisons by Rank**

a. Resistance to Changes in Roles

Implementation of TQL ultimately will redefine or shift some of the responsibility of some roles within the Marine Corps. Since SNCOs hold positions from first-line supervisors to what is considered top leadership, TQL supporters would argue that they must be included in "setting the course today, to be in business tomorrow."[Scherkenbach] Rather than allowing individuals within an organization to only focus attention internally to get a unit to work together and thus minimize friction *inside* the organization, Deming

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[2]Questions 72-75 were eliminated from survey analysis due to the nature of the questions when evaluated individually (out of context). Originally, these questions were part of one statement designed to evaluate perceptions of what a "good" leader is. TQM literature suggests that a "good" leader, as defined by these actions, often fails to recognize the variance introduced by them, and thus suboptimizes the performance of his subordinates by following this traditional management style.

encourages top leadership to establish *constancy of purpose* at all levels of an organization. The TQL philosophy emphasizes the need for each individual within a unit also to focus on requirements emanating from *outside* the organization -- to acknowledge and then meet the customer's needs and expectations.

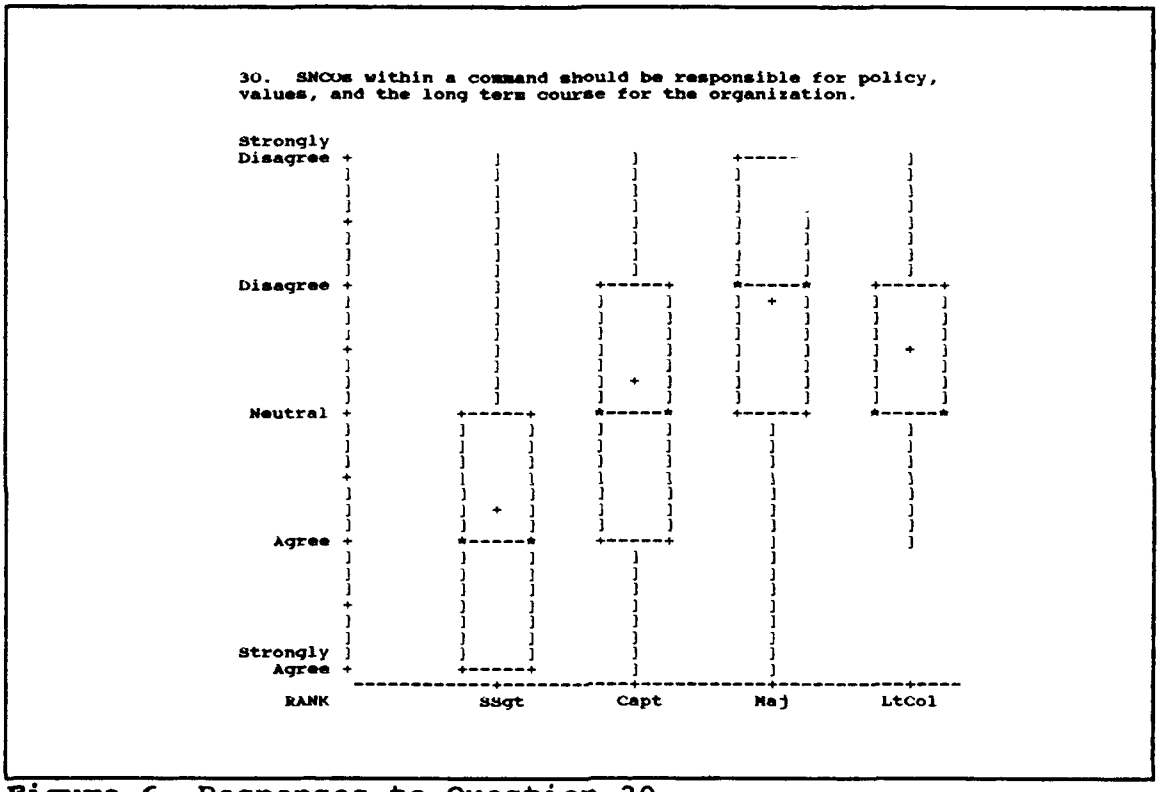

Figure 6 Responses to Question 30

Figure 6 shows how each rank group responds to the survey question which assigns a "constancy of purpose" function to SNCOs (question 30[3]). In this figure, the difference between the responses by the Staff Sergeants and

[3]Question 30: SNCOs within a command should be responsible for policy, values, and the long term course for the organization.

the Majors is notable. Looking at the location of the boxplots, it can be seen that the interquartile range, i.e., central 50% of the response distribution, is skewed toward disagreement for the Majors and agreement for the Staff Sergeants. The average answer (mean, as denoted by (+)) is close to "disagree" for the Majors, but closer to "agree" for the Staff Sergeants. Finally, the location of the median (as denoted by the (*-----*)) illustrates similar differences in the responses of the two groups. In comparison with the responses of the Captains, who show a fairly even distribution around the neutral midpoint, the plots of the responses for the Majors and Staff Sergeants suggest a stronger inclination in one direction or the other.

In contrast to how a TQL champion would answer question 30, and in contrast to the responses by the Staff Sergeants, the Majors tend to show resistance to the idea that SNCOs should have responsibility for policy and planning within a command. Given the frequency of Majors' general disagreement (74%)[4] with such a suggested plan, it can be concluded that Majors disagree with organizational changes that would give SNCOs license to focus on broader concerns inside and outside of the unit.

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[4]Refer to Appendix D. Seventy-four percent denotes the total percentage of responses by Majors that were marked "disagree" (45%) or "strongly disagree" (28%).

It is possible, on the other hand, that the Majors' responses may signal something else: most Majors, in fact, may not identify SNCOs at all in the "top management" roles. This presumption, if it exists, may have affected the respondents' reading of the survey question and may have affected their response. Correlational analysis shows no telling relationships between the Majors' answers to question 30 and their responses to any of the questions measuring influences that affect their commitment to change in general. Thus the survey data offers no insight into the roots of the Majors' sentiment on expanded roles for the SNCOs.

b. Resistance to Changes in Processes

TQL supporters advocate de-emphasizing inspections on the grounds that quality can be built into a product or service without the unnecessary expense of trying to manage outcomes by detecting defects. They would agree, however, that inspections for safety reasons are an attribute of quality performance that few, if any, quality-minded managers or leaders would deny. Figures 7 and 8 identify the range of survey responses on the question of whether these types of inspections should be de-emphasized in the Marine Corps (questions 40[5] and 41[6]). The box plots for the answers of

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[5]Question 40: Ceasing emphasis on individual performance inspections will compromise safety or the quality of performance that we presently observe.

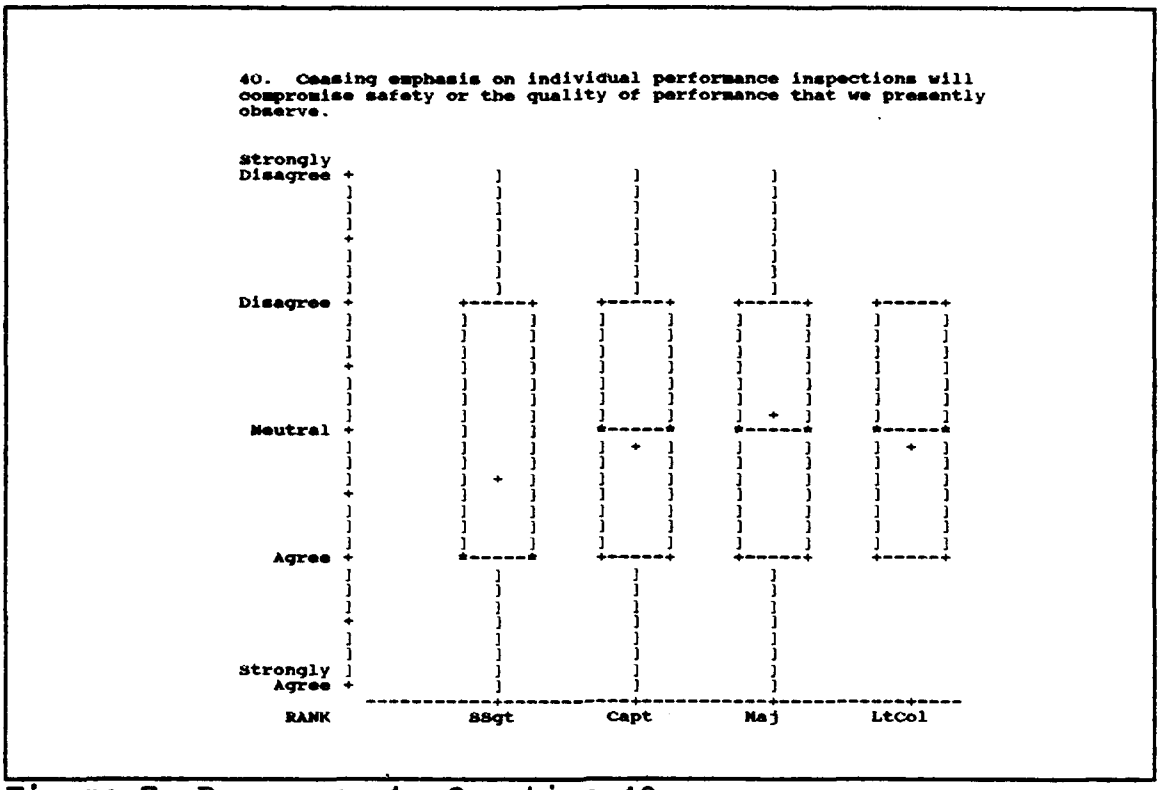

Figure 7 Responses to Question 40

Marines of all ranks are nearly identical. Captains', Majors', and Lieutenant Colonels' survey responses to questions 40-42[7] appear generally neutral on the issue of inspections, but the Staff Sergeants lean toward support for inspections to assess individual and unit performance. The Staff Sergeants' frequency of responses in the direction of agreement (question 40 = 55%, question 41 = 61%) suggests a degree of concern that would need to be addressed when teaching

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[6]Question 41: Ceasing emphasis on unit inspections will compromise safety or the quality of performance that we presently observe.

[7]Question 42: I need to inspect my subordinate's work to ensure that it is of the highest quality.

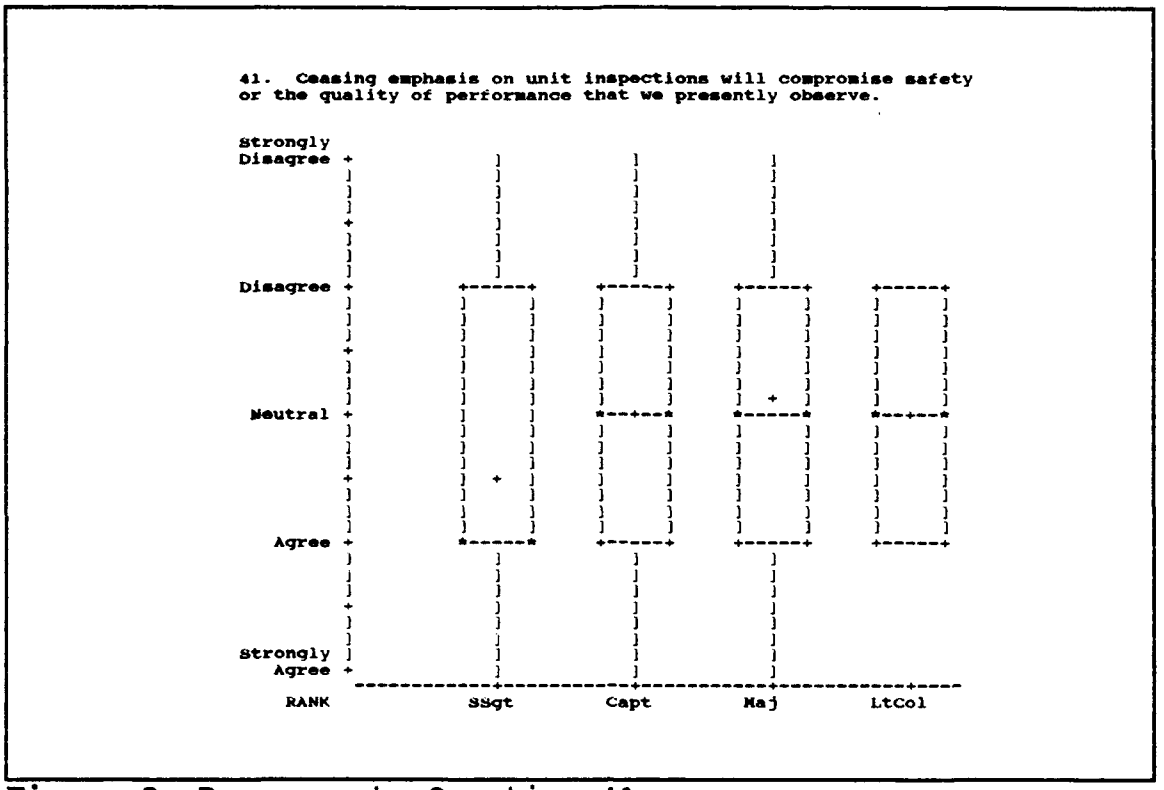

Figure 8 Response to Question 41

or supporting this TQL perspective.

In identifying the possible basis for the Staff Sergeants' resistance, it is interesting to note that in both questions 40 and 42 (Figure 9) their responses are correlated ($r=-.18$ and $r=-.27$, respectively) with their responses on the question of the importance of "possible loss of *job satisfaction*" (as defined in question 1 as working conditions, pride, responsibility, friends and important contacts) and *job security* (as defined in question 3 as authority, personal freedom, and status). The more likely they are to rate job satisfaction and job security as important factors in being committed to a change in general, the more likely they are to

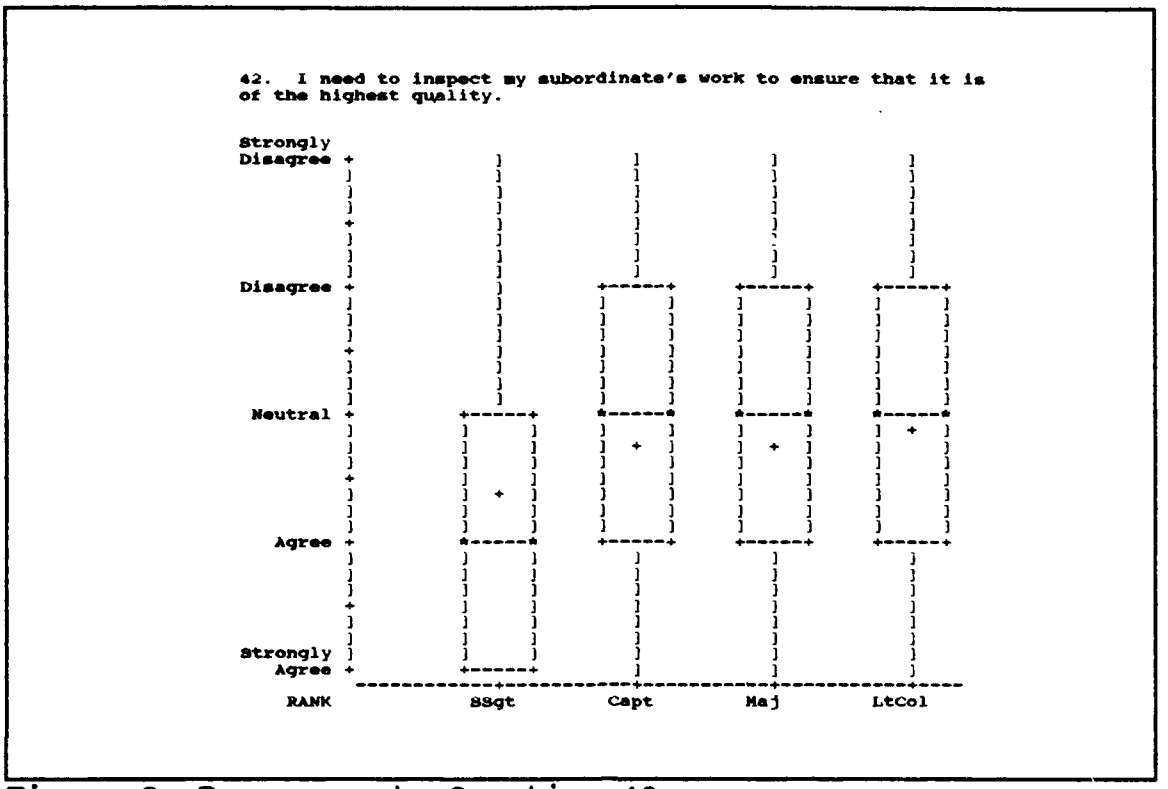

Figure 9 Responses to Question 42

agree that de-emphasizing inspections would compromise safety or performance and that they do need to inspect their subordinate's work. Assuming that Staff Sergeants as a group personally identify with the role of the inspector, this commonality suggests that TQL changes that alter this role will meet some degree of resistance from at least one group of SNCOs.

The Staff Sergeants' answers to question 42 show a correlation with questions 5[8] and 26[9] (r=-.20 and r=-.21,

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[8]Question 5: There is usually no need to change.

[9]Question 26: Loss of important contacts influences my commitment to change.

respectively). As Staff Sergeants tend to agree that inspections are necessary, they also tend to rate higher the belief that *"there is usually no need to change,"* and *"loss of important contacts"* as important factors in their likelihood to be committed to a change. These again support the suggestion that changes in inspection procedures that alter roles or social relationships will meet resistance from some SNCOs.

c. Resistance to identifying necessary change

The belief of middle managers in business environments that they already produce quality work has been identified in research as one reason why these groups are more likely to resist "buying in" to total quality management.[HRM] The Marine Corps' increasingly competitive promotion system and school selection system may support a similar attitude among officers and SNCOs. As the selection process becomes more competitive, so conventional wisdom goes, only "the cream" rises to the top. This inference presents a significant roadblock to the continuous improvement of any product or service and thus works in opposition to a fundamental tenet of TQL. While the range of answers in Figure 10 for the Captains, Majors, and Lieutenant Colonels appear generally neutral, the responses of the Staff Sergeants

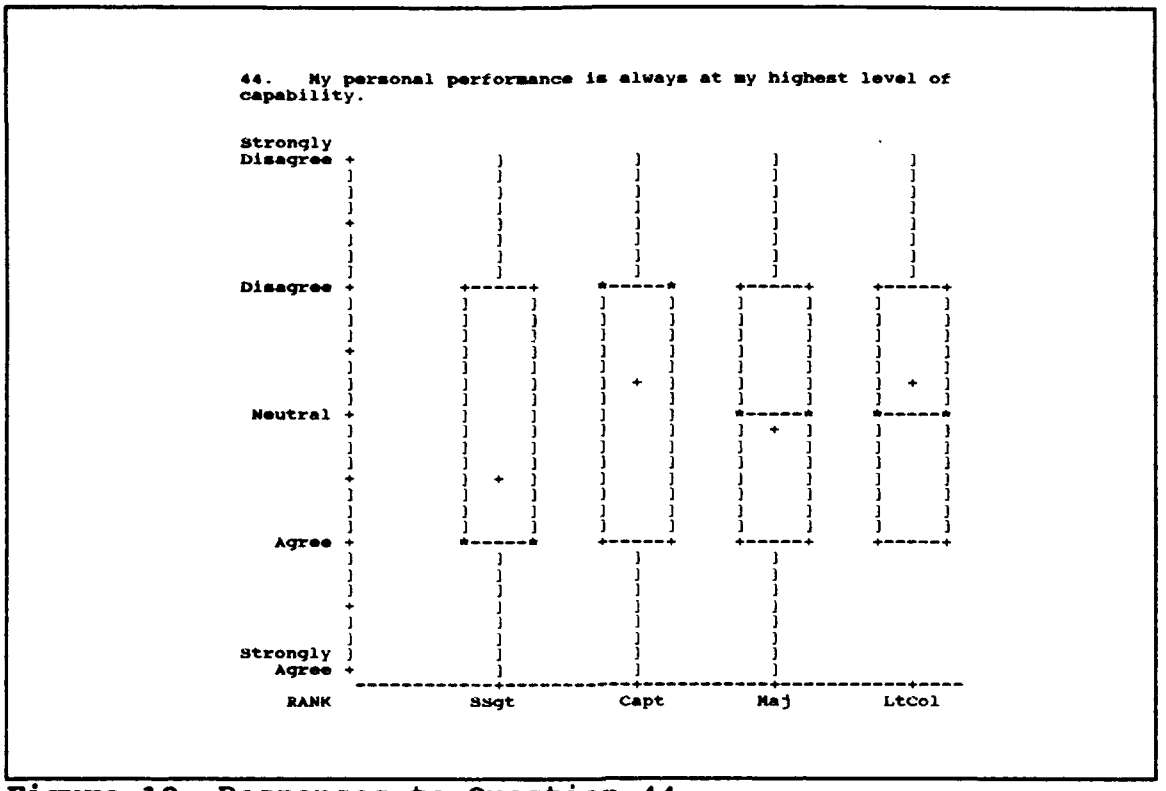

Figure 10 Responses to Question 44

to question 44[10] incline toward agreement with this survey statement. Like the middle managers in business environments, the presumption that one already produces quality work may become a hurdle which interferes with SNCO acceptance of TQL.

Interestingly, the responses by Staff Sergeants to question 44 are correlated ($r = -0.17$) with question 2[11]. That is to say, the greater the agreement about the level of personal performance, the higher the rating of the importance of *"possible loss of money"* to their commitment to a change.

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[10]Question 44: My personal performance is always at my highest level of capability.

[11]Question 2: Possible loss of money (bonuses lost, for example) is important to my commitment to change.

d. Resistance to Changes in Traditional Motivators

Awards have long been used as an incentive by business, government, and military organizations for achieving a certain level of performance. Senior managers who use an award system, however, often overlook the possibility that their system may create barriers to quality. Internal competition within an organization often can thwart the lines of communication necessary to ensure product or service quality. True organizational teamwork may suffer in individual efforts to be the "best," and neither the customers nor the organization will have gained much by the competition. Further, the standards of the award may become the criteria by which quality products or services are defined. For these reasons, total quality advocates tend to disagree with question 58[12] at face value.

In contrast to this TQL belief, the survey responses in Figure 11 show that all ranks surveyed seem predisposed to support the use of awards as a motivational tool. The strong support from respondents of all levels of seniority indicates likely resistance to changes in the Marine Corps award system. The many different survey questions which correlate with these groups' responses to this question about competition do not show a distinct pattern consistent among

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[12]Question 58: Personal or unit competition for awards (informal as well as formal recognition) increases the quality of performance of all who compete.

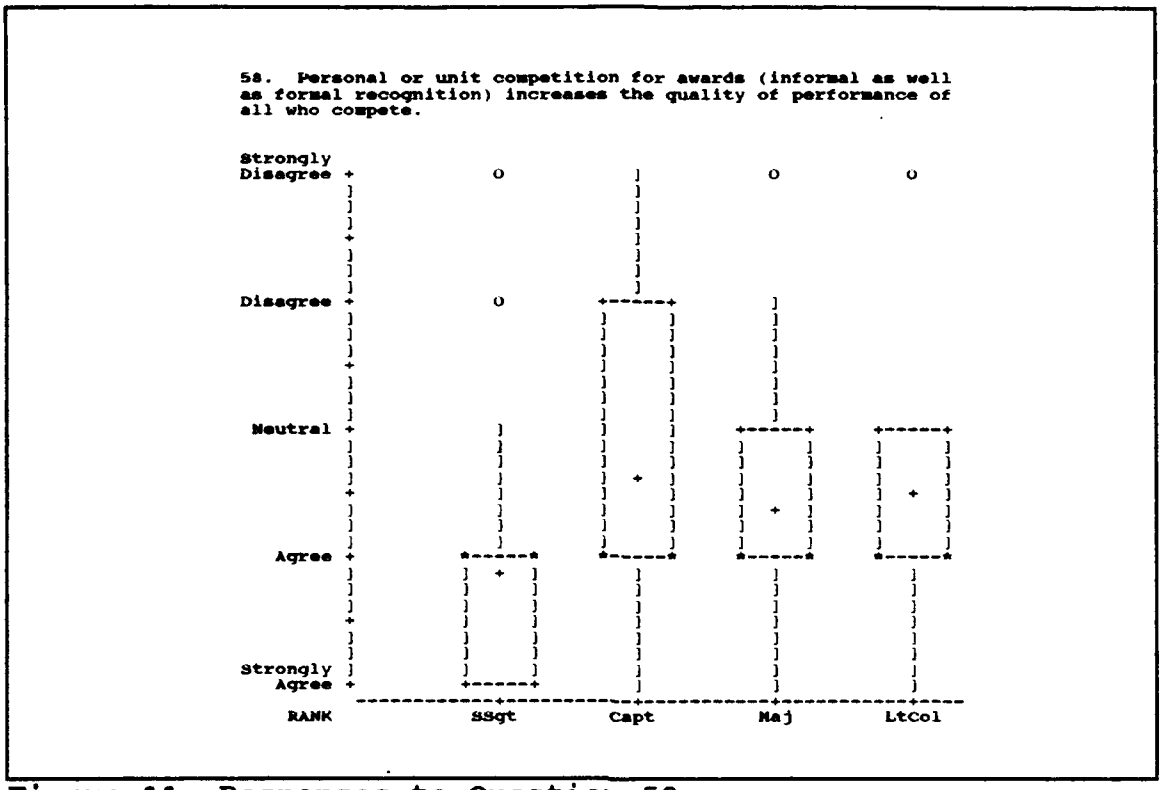

Figure 11 Responses to Question 58

all ranks. Thus it is impossible to surmise a possible overall basis for this resistance to changes in current award processes. Among Staff Sergeants, however, increases in the likelihood of agreement are related to higher ratings of *loss of money* (question 2, r=-.17), *loss of pride* (question 19, r=-.31), *loss of job stability* (question 20, r=-.43), *loss of money* (question 21, r=-.16), *loss of friends* (question 26, r=-.21), *loss of important contacts* (question 27, r=-.22) and *loss of status* (question 28, r=-.19). For Captains, increases in agreement are related (r=-.25) to higher importance of *participation* (question 12, "I am not allowed input...") for personal commitment to a change. For Majors, the responses

toward leaning agreement are correlated (r=-.17) with higher ratings for concern that the *change becomes an opportunity for others to challenge personal authority* (question 17). Finally, agreement with question 44 by the Lieutenant Colonels is correlated with concern that *change adds work and confusion* (question 14, r=-.51) and *change becomes an opportunity to challenge personal authority* (question 17, r = -0.45). These responses also are correlated with the identification of three types of losses as factors in an individual's level of commitment to a change: *pride* (question 19, r=-.57), *job stability* (question 20, r=-.57) and finally *status* (question 28, r=-.55).

e. Resistance to Changes in the Status Quo

American military organizations traditionally engender in their personnel a high degree of pride in how they, as organizations, confront and overcome challenges. For Marines, this confidence in how the Corps traditionally resists external pressures to change can also be an underlying reason for not accepting the need for TQL[13]. If viewed as a DoD mandate that ignores the unique leadership principles that have been practiced successfully by generations of Marines, TQL is bound to be rejected unconsidered and untried. When queried (Figure 12) on their opinion of the effectiveness of

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[13]See chapter 2, part 1c of this thesis for a description of Jeffrey Goldstein's autopoiesis theory of resistance to change.

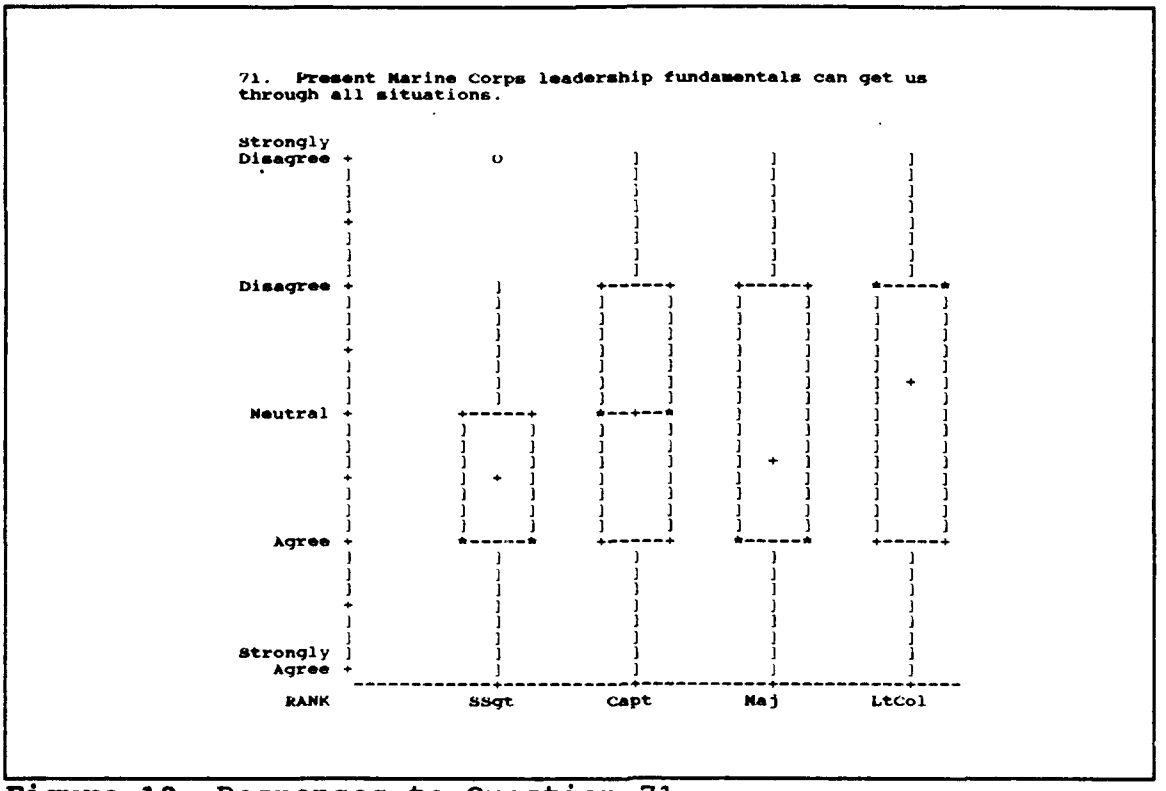

Figure 12 Responses to Question 71

current leadership fundamentals (question 71)[14], the Staff Sergeants and Majors appear fairly optimistic about the status quo, the Captains look neutral, while the Lieutenant Colonels seem slightly less sure. It would be unwise to conclude that these survey responses, especially by the Staff Sergeants and Majors, indicate outright resistance to TQL. However, these responses may suggest that ideas that appear foreign to traditional leadership fundamentals will be met with some degree of skepticism. Without understanding the ways TQL principles complement rather than contradict established

[14]Question 71: Present Marine Corps leadership fundamentals can get us through all situations.

Marine Corp doctrine, and without an appreciation for the benefits TQL could bring to the Marine Corps, some Marines will reject TQL simply out of loyalty to time-honored Marine ideals.

The responses of the Majors to this question showed some relationship (r= -.0.16) to their responses to question 9[15]. That is, as the Majors tend to agree with the statement on leadership fundamentals, they also tend to put a higher value on *the competence of the individual making the change.* This suggests that the Majors show a particular concern with the abilities and credentials of the implementers of change in the area of leadership fundamentals. The responses of the Staff Sergeants, on the other hand, show no explanatory correlation for their optimism.

f. Resistance to TQL Tools and Techniques

The application of quantitative methods is one aspect of training that is strongly advocated by TQL followers yet resisted by many people out of fear or lack of understanding. This resistance often comes in the form of excuses such as "We rely on our experience," to solve problems, or "Our problems are different here," or "That's for manufacturing, not for me."[Scherkenbach] Statistical thinking and statistical methods provide powerful analytic

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[15]Question 9: Lack of respect for the competence of the person making the change is an important influence to my personal commitment to a change.

tools for discovering special and common causes that may be preventing achievement of a quality product or service. Furthermore, they provide an opportunity to measure modifications in processes and a means to evaluate whether or not changes implemented are in fact working. The emphasis by champions of quality on quantitative methods, however, is not to be construed as a substitution of technical methods for leadership. More appropriately, it should be thought of as an effort to enhance the problem solving abilities of people who can affect quality.

The very high incidence of disagreement to questions 80[16] and 81[17], as displayed in Figures 13 and 14[18], by the Captains, Majors, and Lieutenant Colonels suggest that the use of quantitative tools is one area of TQL implementation in which solid resistance will be felt, especially among the officers.

While the responses to these survey questions are correlated to a broad range of part one and part two survey questions by the various ranks, no single reason appears as an

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[16]Question 80: Quantitative methods (basing decisions on numbers gained through different measurement techniques vice opinions or experience) should be taught at all levels.

[17]Question 81: Quantitative methods should be used as a primary factor in daily decision making at all levels.

[18]Note: The apparent absence of an interquartile range (box) for the Captains and Lieutenant Colonels is the result of such a high frequency of answers (41% and 47%, respectively) at this particular response choice.

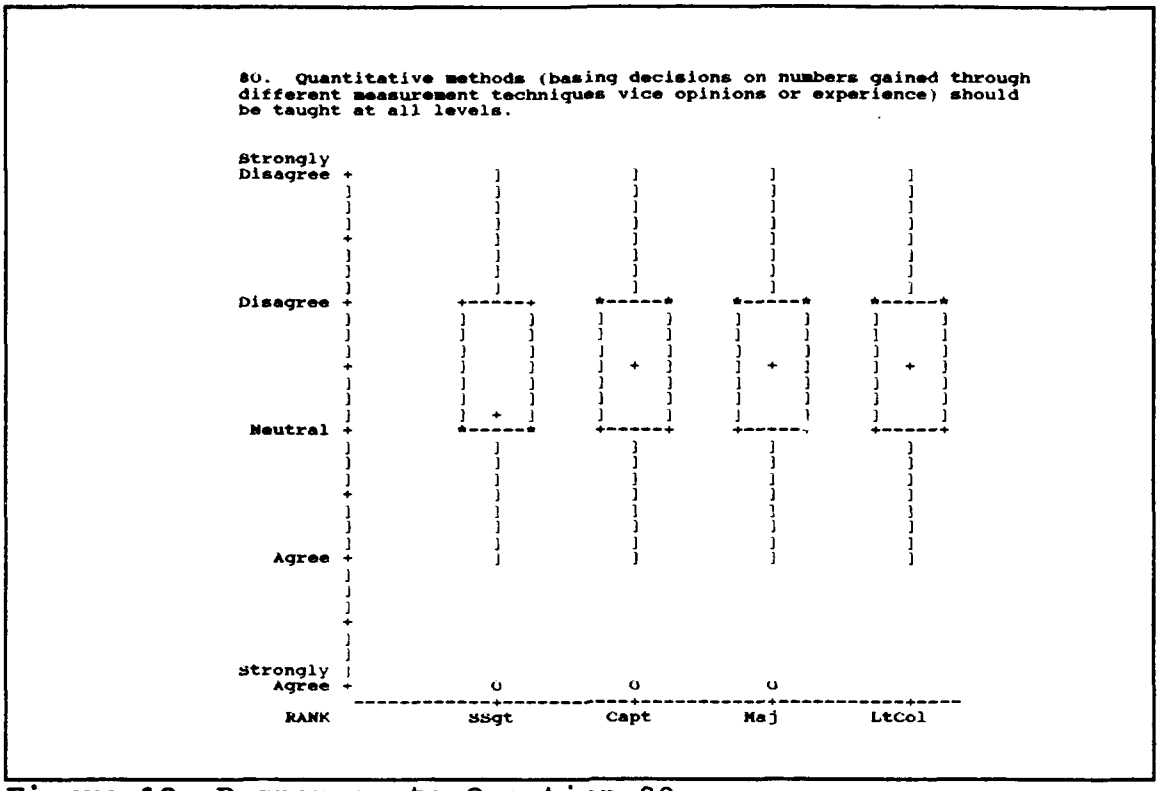

Figure 13 Responses to Question 80

obvious basis for this resistance. For Captains responding to question 81, *loss of responsibility* [to a "process"] (question 23) shows the strongest correlation (r=.28) as a basis for their resistance. Lieutenant Colonels, on the other hand, show a correlation (r=.44 and r=.42, respectively) in both question 80 and question 81 to question 4[19]. This relationship demonstrates that their objection to both teaching quantitative methods to all ranks and using them as a primary factor in daily decision making may be based on a *fear of being required to change jobs* or possibly locations.

[19]Question 4: Possible loss of job stability (requirement to change jobs or PCS) influences my commitment to a change.

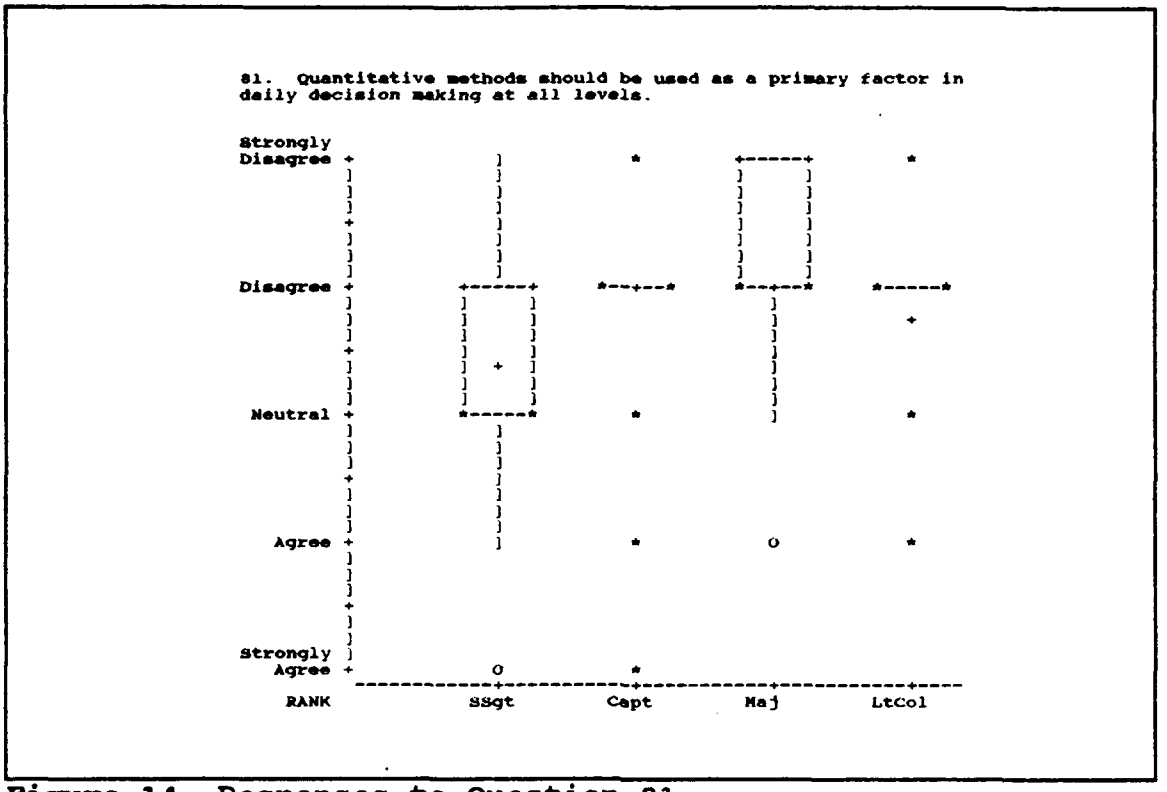

Figure 14 Responses to Question 81

The Majors' and the Lieutenant Colonels' responses show some correlation (r=-.21 and r=-.42, respectively) to question 17[20]. This correlation indicates that the stronger the objection to the use of quantitative methods among these groups, the lesser the concern that changes will provide opportunities for challenges to personal authority. These statistical relationships between the responses of the field grade officers do not provide us a more clear picture of why these ranks object to reliance on quantitative methods, but

[20]Question 17: "Change becomes an opportunity for others to challenge my authority" influences my commitment to a change.

they do suggest that their objections are not based on a fear of loss of control.

V. CONCLUSIONS AND RECOMMENDATIONS

Successful implementation of Total Quality Leadership must include attention to reshaping, and in some instances replacing, various aspects of the Marine Corps' organizational culture. This culture is composed of style, climate, traditional character, norms, core assumptions, decision procedures, and leadership attitudes. Some TQL principles challenge these components individually and collectively. Others are supported by them. Recognizing where changes are necessary and how strongly particular changes will be opposed is a key to success in managing the change process and gaining commitment to TQL.

A. CONCLUSIONS

In a survey of four ranks of Marine students at the Marine Corps University, a general lack of resistance to the principles that embody TQL is found. Of the 60 survey questions aimed at identifying Marines' resistance to changes required by TQL, only four questions (representing three of Deming's 14 points) appear to meet resistance. When all responses are evaluated on a rank subgroup basis, these four questions and an additional five others (representing five of Deming's 14 points) appear to meet resistance by one or more rank subgroups. The neutrality or agreement expressed on the

remainder of the survey questions (in both analyses) suggests that Marines are far less resistant to TQL than many people assume. Marines' compliance on a preponderance of TQL issues underscores the compatibility of Total Quality Management with traditional Marine Corps doctrine. While this apparent lack of resistance is encouraging, an analysis of survey data does expose resistance among some ranks to specific types of changes typical of TQM/TQL efforts. The Marines surveyed express varying degrees of resistance to the following specific changes:

- Majors show some resistance to the suggestion that SNCOs within a command be responsible for policy, values, and the long term course for the organization.
- Staff Sergeants show some resistance to de-emphasizing individual performance and unit inspections.
- Staff Sergeants show an overall inclination to inspect subordinates' work to ensure that it is of the highest quality. This indicates possible resistance to changes in the process or reasons for inspections.
- Staff Sergeants show a higher inclination than other ranks to evaluate their personal performance as always at their highest level. This suggests possible resistance to TQL changes based on the presumption that no changes are necessary because they already produce quality work.
- All ranks surveyed demonstrate a belief in the idea that competition for awards increases the performance of all who compete. This indicates possible resistance to TQL changes which reevaluate the contributions of awards as they traditionally are used to motivate or recognize individuals or units.
- Staff Sergeants and Majors tend to show agreement with the idea that current Marine Corps leadership fundamentals can get the Marine Corps through all situations. This indicates possible resistance to TQL changes based on

loyalty to Marine Corps ideals and their satisfaction with the status quo.

- Captains, Majors, and Lieutenant Colonels tend to object to both the teaching of quantitative methods to all ranks and the use of quantitative methods as a primary factor in daily decision making. This suggests that TQL changes which involve the introduction and use of these tools will meet some resistance, at least from the officers.

It must be remembered that the Marines surveyed expressed resistance to specific changes supported by TQL principles, but not to the principles themselves. The purpose of this research is to measure Marines' resistance to changes which affect their workplace procedures and relationships. It does not attempt to determine whether Marines support or oppose the implementation of TQL in the Marine Corps. The questions were worded in such a way that *the essence of a change required by TQL* was articulated, not the rationale of the philosophy itself.

In an attempt to understand possible bases for the particular resistance identified, the responses of each rank which expresses resistance to a TQL change question were correlated with that rank's responses to questions which evaluate the factors that influence commitment to change in general. These analyses were done only for rank groups that show evidence of resistance to specific aspects of TQL as described above. The most noteworthy of these findings are:

- The responses of the Staff Sergeants who demonstrate some resistance to ceasing emphasis on individual performance and unit inspections show a correlation to *possible loss*

of job satisfaction and *job security* as important factors to being committed to a change in general.

- The Staff Sergeants who are more inclined to feel the need to inspect subordinates' work show a tenancy to rate *"there is usually no need to change"* and *"loss of important contacts"* as important factors to being committed to change in general.

- The Staff Sergeants who are more inclined to rate their personal performance as always at their highest capability show some tenancy to rate *"possible loss of money"* as a factor in their likelihood to commit to change in general.

- The Majors who are optimistic that present Marine Corps leadership fundamentals can get us through all situations show some tenancy to rate *the competence of the individual making the change* as important for their personal commitment to change in general.

- The very high incidence of disagreement among all ranks with teaching quantitative methods and among the officers with using quantitative methods as a primary factor in daily decision making is correlated with expressed importance of *"loss of responsibility"* among the Captains, and possible *"loss of job stability"* among the Lieutenant Colonels.

Only more detailed studies can reveal *why* individuals resist the changes they do. But armed with the knowledge of which changes are most likely to offend Marines' sense of job satisfaction, security, and stability, it will be easier for planners of TQL changes in the Marine Corps to fashion the transition in such a way that it meets with the fewest objections possible.

B. RECOMMENDATIONS

TQL methodology itself urges leaders to base process and policy on informed decisions. These decisions require

supporting data as well as experience and opinion. Likewise, this thesis is an attempt to make available to Marine Corps planners data gathered about the predispositions of Marines of different ranks to changes prompted by the implementation of TQL. The survey serves to identify TQL changes that seem threatening to specific groups. This information is valuable to those Marines charged with developing the education and implementation plan to ensure the success of TQL in the Marine Corps.

What implications does identification of these concerns or values have for military training and education in the area of TQL? What impact does this have on the successful implementation of TQL in the Marine Corps? In answering these questions, it appears encouraging first to note that Marines generally are accepting and/or neutral to the majority of changes prompted by TQL. Thus those individuals responsible for implementing TQL in the Marine Corps need not be skeptical of the success of their efforts. Only a few examples of TQL changes show resistance, and this resistance usually is not across all ranks. However, this research does support the need for special emphasis and attention to TQL changes that may seem threatening to specific groups with specific concerns.

The educational system within the Marine Corps can be used to help overcome these concerns. While it can provide a non-

threatening environment for Marines to learn the principles and premises of TQL, it should also focus on the following:

- Communicating the expected affects of TQL principles, premises, and changes on individuals, ranks, roles, and the organization as a whole.
- Reinforcing the value of being receptive to the needs and concerns of subordinates.
- Developing in Marine leaders communication techniques and listening skills that enhance their ability to recognize, reframe, and overcome resistance to TQL as it is encountered in their regular duties.
- Developing a greater awareness in all Marines of the pressures that are making the introduction of TQL into the Marine Corps a necessary and important change.

These strategies, although broad in nature, can serve to weaken the link between the perceived consequences of change and the implementation of TQL in the Marine Corps. The successful absorption of leadership ideals endorsed by TQL will be most successful in a classroom which concomitantly operates along TQL lines. The simultaneous learning and modeling of TQL in the classroom makes the Marine Corps educational system a critical force for challenging thinking and behavior aimed at maintaining the status quo. Overcoming resistance early and effectively via the educational system may mean the difference between a Marine Corps that is only superficially compliant with the principles of TQL and a Marine Corps that is committed to improving constantly the quality of its products and services.

C. RECOMMENDATIONS FOR FUTURE STUDY

The work reported here suggests several research possibilities. First, the surveying of those ranks of noncommissioned officers, staff noncommissioned officers, and officers not available at the time of data collection is warranted. Replication of this study both within the Marine Corps schools system and in the Fleet Marine Force (FMF) would help determine the generalizability of the findings. This would provide a more detailed view of the attitudes of all Marines in leadership positions toward TQL principles and TQL change. Secondly, moving beyond the notion of replication, the relationship of needs, group influence, and leadership style should be studied in different TQL change situations.

APPENDIX A

SURVEY QUESTIONS BY CATEGORY

Scale - Part One

Individual importance to being personally committed to a change:

1 = Very low 2 = Low 3 = Moderate 4 = Fairly high 5 = High

Questions

1. Possible loss of job satisfaction (working conditions, pride, responsibility, friends and important contacts)
2. Possible loss of money (bonuses lost, for example)
3. Possible loss of job security (authority, personal freedom, status)
4. Possible loss of job stability (requirement to change jobs or PCS)
5. There is usually no need to change
6. In the short term, change will create more harm than good
7. In the long term, change will create more harm than good
8. Personal lack of respect for the person making the change
9. Personal lack of respect for the competence of the person making the change
10. I am told what to do but not why
11. I may have negative attitudes toward the job, organization, or my boss
12. I am not allowed input into the change effort
13. The change may be the result of someone's personal criticism of my previous efforts
14. Change adds work, confusion, mistakes and other negative results
15. Change requires effort by all involved or affected
16. The change may be poorly timed
17. Change becomes an opportunity for others to challenge my authority
18. I resent hearing about changes secondhand

Scale - Part Two

Degree to which the loss of this would influence my commitment to a change....

1 = Very low 2 = Low 3 = Moderate4 = Fairly high 5 = High

Questions

19. Pride
20. Job stability
21. Money

22. Personal freedom
23. Responsibility
24. Authority
25. Working conditions
26. Friends
27. Important contacts
28. Status

Scale - Part Three

Degree to which I agree/disagree with the following statement....

1 = Strongly agree
2 = Agree
3 = Neutral
4 = Disagree
5 = Strongly disagree

Point One: Create constancy of purpose for improvement of product and service.

29. In planning, it is the sole responsibility of higher headquarters and staff sections to determine the needs and requirements of the product or service user and pass that information to the appropriate levels within their command.
30. SNCOs within a command should be responsible for policy, values, and the long term course for the organization.
31. Long term planning is effective at levels lower than the commanding officer.
32. Long term planning should be made at levels lower than the commanding officer.
33. Marine Corps policies and practices that reward short term planning more than long term planning are necessary.
45. Officers within a command should be responsible for policy, values, and the long term course for the organization.
88. Officers should include SNCOs in formulating policy, values, and the long term course for the organization.

Point Two: Adopt the new philosophy.

34. The nature of the Marine Corps' mission and training requires a dependence on short term planning over long term planning.
35. Everything is okay in the Marine Corps, so why change?
36. Although faced with reduced funding and manning levels, our present course in the Marine Corps will allow a high degree of readiness and mission accomplishment without major changes.
37. I believe that the Marine Corps needs to make major improvements in the way we operate.
38. I believe that we should put more emphasis on improving the quality of what we do than meeting budget (money) and schedules (time required to meet specific objectives).

Point Three: Cease dependence on mass inspection.

39. The Marine Corps is dependent on inspections to achieve desired results.
40. Ceasing emphasis on individual performance inspections will compromise safety or the quality of performance that we presently observe.

41. Ceasing emphasis on unit inspections will compromise safety or the quality of performance that we presently observe.
42. I need to inspect my subordinate's work to ensure that it is of the highest quality.

Point Five: Improve constantly and forever the system of production and service.
43. The Marine Corps is as good as it can get.
44. My personal performance is always the at my highest level of capability.
46. Lack of time (training time, personal time or other) is one of the biggest if not the single biggest barrier to continuously improving personal or unit performance.
47. Continuous improvements to quality of personal or unit performance cost more time, money, or other resources.
48. The cost of continuous improvements to the quality of personal or unit performance is usually more than the benefits gained.

Point Twelve: Remove barriers to pride of workmanship.
49. One of a leader's most important jobs is to remove organization/system barriers (people, policies, procedures, etc.) that hinder efficiency and effectiveness.
50. It's too much effort to remove barriers that keep a unit from being effective.
51. People above me create barriers that won't allow me to improve.
52. Current Marine Corps policies and procedures don't allow enough latitude or freedom to improve my work.

Point Eight: Drive out fear.
53. Leadership by fear and force is intolerable.
54. Leadership by fear and force squanders our greatest resource, our people.
55. There is no place for leadership by fear and force in the Marine Corps.
56. Some Marines (officer and enlisted) need to be led by fear and force in order to get them to perform to standard.

Point Nine: Break down barriers between staff areas.
57. Team play within a unit is a primary requirement for achieving mission accomplishment.
58. Personal or unit competition for awards (informal as well as formal recognition) increases the quality of performance of all who compete.
59. Close supervision and/or formal inspections foster communication and cooperation within a unit.
60. "Assistance visits" from higher headquarters or within a unit foster communication and cooperation within a unit.

Point Ten: Eliminate slogans, exhortations and targets for the work force.
61. Slogans ("Safety is everyone's responsibility," for example) significantly contribute to individual or unit performance.
62. Most units rely heavily on slogans to motivate Marines to do a better job.
63. Slogans motivate Marines to do a better job.
64. Slogans that come from a unit's leadership tend to have little or no affect on the attitudes or performance of junior Marines.

Point Eleven: Eliminate numerical quotas.

65. Technical manual (TM) work standards are reliable estimates of how long a job should take.
66. Marine technicians that cannot meet TM work standards usually lack experience, knowledge or motivation.
67. Eliminating work standards causes confusion or the need for increased supervision.

Point Seven: Institute leadership.

68. NCOs receive adequate leadership training for their particular rank and responsibility.
69. Officers receive adequate leadership training for their particular rank and responsibility.
70. Most officers and SNCOs have the opportunity to participate in the same small group or unit training that has been scheduled for their units.
71. Present Marine Corps' leadership fundamentals can get us through all situations.
72. A good leader is one who sets up a system, directs the work through subordinates.
73. A good leader develops a basis to set standards of performance for his subordinates.
74. A good leader sets goals and targets for mission accomplishment.
75. A good leader rates subordinate performance against these targets.

Point Six: Institute training.

76. Continuing MOS training for all Marines should be among the foremost concerns of unit leadership.
77. The Marine Corps should invest more time and money in MOS training for personnel.
78. Marines generally feel that they have received the proper amount of MOS skill training to be successful in their jobs.
79. I feel that I have received the proper amount of MOS training to be successful in my job.
80. Quantitative methods (basing decisions on numbers gained through different measurement techniques vice opinions or experience) should be taught at all levels.
81. Quantitative methods should be used as a primary factor in daily decision making at all levels.

Point Thirteen: Institute a vigorous program of education and retraining.

82. Continuing education (warfighting, college, other outside education) for all Marines should be among the foremost concerns of unit leadership.
83. The Marine Corps should invest more money in educating (warfighting, college, etc.) personnel.
84. I feel that I have received the proper amount of education to be successful in my job.
85. I feel that emphasizing outside education for all ranks will improve individual performance and unit readiness.

Point Fourteen: Take action to accomplish the transformation.

86. "Do not tell Marines how to do something, just tell them what you want done." Marines are experienced enough to figure out how to accomplish the desired outcome.
87. Leaders should not work directly with their subordinates on the process, the how and the why unless their subordinates seek assistance. They should only supervise.

APPENDIX B

MARINE CORPS UNIVERSITY CHANGE SURVEY

Dear Survey Participant:

This survey is designed to obtain your thoughts and opinions about how you respond to change in general, and more specifically, what your attitudes are regarding specific changes planned for the future.

The survey will be administered, collected and analyzed by a fellow Marine who is a student of the Naval Postgraduate School. It includes several questions concerning you and your job. Your responses will be kept completely confidential and will be combined with others for data analysis. No individual responses will be reported or made available to anyone. Therefore, it is not necessary to sign your name on your answer sheet.

Your frank, candid opinions are important and sincerely welcome. Please read each question carefully before responding. Most can be answered by simply choosing the number that most nearly represents your opinion. The survey should take about 30 minutes to complete.

Your assistance in this effort is appreciated.

Please do not write on this questionnaire. An answer sheet has been provided.

A change in policy, procedures, or values may affect you personally or may affect other members of your group, unit or organization collectively. When a change is proposed, there are many factors that influence one's attitudes toward accepting or rejecting that change. Although we may comply with the change, we are sometimes not initially or entirely committed to it.

Think about recent changes in your work environment. Listed below are common reasons why people may resist change. In general, which of the following do you believe are the most common reasons that you initially may not be committed to a change or a proposed change? Which of the following would have the least amount of influence on your commitment?

Read through the factors listed in questions 1 - 18. Then return and evaluate each of the factors below by the relative importance that you believe it plays in *your* decision to be committed, ***in general***, to a change or to a proposed change. Use the following scale to rate the degree of influence the factor may have on your decisions.

Individual importance to being personally committed to a change:

1 = Very low 2 = Low 3 = Moderate 4 = Fairly high 5 = High

---

1. Possible loss of job satisfaction (working conditions, pride, responsibility, friends and important contacts)

2. Possible loss of money (bonuses lost, for example)

3. Possible loss of job security (authority, personal freedom, status)

4. Possible loss of job stability (requirement to change jobs or PCS)

5. There is usually no need to change

6. In the short term, change will create more harm than good

7. In the long term, change will create more harm than good

8. Personal lack of respect for the person making the change

9. Personal lack of respect for the competence of the person making the change

10. I am told what to do but not why

Individual importance to being personally committed to a change:

1 = Very low 2 = Low 3 = Moderate 4 = Fairly high 5 = High

11. I may have negative attitudes toward the job, organization, or my boss

12. I am not allowed input into the change effort

13. The change may be the result of someone's personal criticism of my previous efforts

14. Change adds work, confusion, mistakes and other negative results

15. Change requires effort by all involved or affected

16. The change may be poorly timed

17. Change becomes an opportunity for others to challenge my authority

18. I resent hearing about changes secondhand

It is both natural and common for an individual to resist change because they justifiably may fear the loss of something important to them. Rate the following types of losses by the degree that it might influence your initial commitment to a change or proposed change in your work environment.

Degree to which the loss of this would influence my commitment to a change....

1 = Very low 2 = Low 3 = Moderate 4 = Fairly high 5 = High

Loss of...

19. Pride

20. Job stability

21. Money

22. Personal freedom

23. Responsibility

24. Authority

25. Working conditions

26. Friends

27. Important contacts

28. Status

The following statements attempt to identify your opinions of specific management and leadership tools, methods and techniques advocated by a particular change effort. The term "product" refers to something that one produces, such as a report or operations plan. The term "service" refers to something that one provides, such as close air support or transportation. "Long term" refers to changes that will last no less than five years into the future.

Evaluate each question quickly. Do not try to "read into" the questions. These questions do not have a right or wrong answer. They are your opinions! Answer each question on the following scale.

Degree to which I agree/disagree with the following statement....

1 = Strongly agree
2 = Agree
3 = Neutral
4 = Disagree
5 = Strongly disagree

---

29. In planning, it is the sole responsibility of higher headquarters and staff sections to determine the needs and requirements of the product or service user and pass that information to the appropriate levels within their command.

30. SNCOs within a command should be responsible for policy, values, and the long term course for the organization.

31. Long term planning is effective at levels lower than the commanding officer.

32. Long term planning should be made at levels lower than the commanding officer.

33. Marine Corps policies and practices that reward short term planning more than long term planning are necessary.

34. The nature of the Marine Corps' mission and training requires a dependence on short term planning over long term planning.

35. Everything is okay in the Marine Corps, so why change?

36. Although faced with reduced funding and manning levels, our present course in the Marine Corps will allow a high degree of readiness and mission accomplishment without major changes.

Degree to which I agree/disagree with the following statement....

1 = Strongly agree
2 = Agree
3 = Neutral
4 = Disagree
5 = Strongly disagree

37. I believe that the Marine Corps needs to make major improvements in the way we operate.

38. I believe that we should put more emphasis on improving the quality of what we do than meeting budget (money) and schedules (time required to meet specific objectives).

39. The Marine Corps is dependent on inspections to achieve desired results.

40. Ceasing emphasis on individual performance inspections will compromise safety or the quality of performance that we presently observe.

41. Ceasing emphasis on unit inspections will compromise safety or the quality of performance that we presently observe.

42. I need to inspect my subordinate's work to ensure that it is of the highest quality.

43. The Marine Corps is as good as it can get.

44. My personal performance is always at my highest level of capability.

45. Officers within a command should be responsible for policy, values, and the long term course for the organization.

46. Lack of time (training time, personal time or other) is one of the biggest if not the single biggest barrier to continuously improving personal or unit performance.

47. Continuous improvements to quality of personal or unit performance cost more time, money, or other resources.

48. The cost of continuous improvements to the quality of personal or unit performance is usually more than the benefits gained.

Degree to which I agree/disagree with the following statement....

1 = Strongly agree
2 = Agree
3 = Neutral
4 = Disagree
5 = Strongly disagree

49. One of a leader's most important jobs is to remove organization/system barriers (people, policies, procedures, etc.) that hinder efficiency and effectiveness.

50. It's too much effort to remove barriers that keep a unit from being effective.

51. People above me create barriers that won't allow me to improve.

52. Current Marine Corps policies and procedures don't allow enough latitude or freedom to improve my work.

53. Leadership by fear and force is intolerable.

54. Leadership by fear and force squanders our greatest resource, our people.

55. There is no place for leadership by fear and force in the Marine Corps.

56. Some Marines (officer and enlisted) need to be led by fear and force in order to get them to perform to standard.

57. Team play within a unit is a primary requirement for achieving mission accomplishment.

58. Personal or unit competition for awards (informal as well as formal recognition) increases the quality of performance of all who compete.

59. Close supervision and/or formal inspections foster communication and cooperation within a unit.

60. "Assistance visits" from higher headquarters or within a unit foster communication and cooperation within a unit.

61. Slogans ("Safety is everyone's responsibility," for example) significantly contribute to individual or unit performance.

Degree to which I agree/disagree with the following statement....

1 = Strongly agree
2 = Agree
3 = Neutral
4 = Disagree
5 = Strongly disagree

62. Most units rely heavily on slogans to motivate Marines to do a better job.

63. Slogans motivate Marines to do a better job.

64. Slogans that come from a unit's leadership tend to have little or no affect on the attitudes or performance of junior Marines.

65. Technical manual (TM) work standards are reliable estimates of how long a job should take.

66. Marine technicians that cannot meet TM work standards usually lack experience, knowledge or motivation.

67. Eliminating work standards causes confusion or the need for increased supervision.

68. NCOs receive adequate leadership training for their particular rank and responsibility.

69. Officers receive adequate leadership training for their particular rank and responsibility.

70. Most officers and SNCOs have the opportunity to participate in the same small group or unit training that has been scheduled for their units.

71. Present Marine Corps' leadership fundamentals can get us through all situations.

72. A good leader is one who sets up a system, directs the work through subordinates.

73. A good leader develops a basis to set standards of performance for his subordinates.

74. A good leader sets goals and targets for mission accomplishment.

Degree to which I agree/disagree with the following statement....

1 = Strongly agree
2 = Agree
3 = Neutral
4 = Disagree
5 = Strongly disagree

75. A good leader rates subordinate performance against these targets.

76. Continuing MOS training for all Marines should be among the foremost concerns of unit leadership.

77. The Marine Corps should invest more time and money in MOS training for personnel.

78. Marines generally feel that they have received the proper amount of MOS skill training to be successful in their jobs.

79. I feel that I have received the proper amount of MOS training to be successful in my job.

80. Quantitative methods (basing decisions on numbers gained through different measurement techniques vice opinions or experience) should be taught at all levels.

81. Quantitative methods should be used as a primary factor in daily decision making at all levels.

82. Continuing education (warfighting, college, other outside education) for all Marines should be among the foremost concerns of unit leadership.

83. The Marine Corps should invest more money in educating (warfighting, college, etc.) personnel.

84. I feel that I have received the proper amount of education to be successful in my job.

85. I feel that emphasizing outside education for all ranks will improve individual performance and unit readiness.

86. "Do not tell Marines how to do something, just tell them what you want done." Marines are experienced enough to figure out how to accomplish the desired outcome.

Degree to which I agree/disagree with the following statement....

1 = Strongly agree
2 = Agree
3 = Neutral
4 = Disagree
5 = Strongly disagree

87. Leaders should not work directly with their subordinates on the process, the how and the why unless their subordinates seek assistance. They should only supervise.

88. Officers should include SNCOs in formulating policy, values, and the long term course for the organization.

The last set of questions is needed to help us with the statistical analysis of the data. This information will allow for comparison with other Marine groups. No attempt will be made to identify your individual responses in this or any other part of the survey.

89. In which general category would you classify the majority of your tours?
1. Ground
2. Aviation
3. Aviation(Ground)

90. What is your highest level of education?
1. High School degree or equivalent
2. Vocational/Technical degree
3. Bachelor's degree
4. Graduate degree
5. PhD or JD

91. How many different commands or assignments have you been associated with since your first enlistment/commissioning?
1. 1 - 2
2. 3 - 4
3. 5 - 6
4. More than 6

92. Although for earlier purposes "long term" was defined, in your most recent assignment, what would you consider an appropriate range for long term planning?
1. 3 - 9 months
2. 9 - 15 months
3. 15 - 24 months
4. 24 - 48 months
5. 48 months and beyond

93. Have you ever served at Headquarters Marine Corps in any capacity?
1. Yes
2. No

94. Have you ever served on a general's staff, or directly supported a general's staff?
1. Yes
2. No

95. Have you ever had a tour as a Marine Corps representative to the defense industry?
1. Yes
2. No

96. What is your gender?
1. Male
2. Female

97. How many years of service (including broken time) have you served?
1. 2 - 4
2. 5 - 7
3. 8 - 9
4. 10 - 15
5. More than 15

Please be sure that you answer each of the following questions.

98. What is your rank?
1. Corporal
2. Sergeant
3. Staff Sergeant
4. Gunnery Sergeant
5. None of the above

99. (same question)
1. Master Sergeant/First Sergeant
2. Master Gunnery Sergeant/Sergeant Major
3. Second Lieutenant
4. First Lieutenant
5. None of the above

100. (same question)
1. Captain
2. Major
3. Lieutenant Colonel
4. Colonel
5. None of the above

101. Which occupational field does your primary MOS fall into?
1. 01
2. 02
3. 03
4. 04
5. None of the above

102. (same question)
   1. 08
   2. 11 or 13
   3. 14, 15, 46, or 55
   4. 18
   5. None of the above

103. (same question)
   1. 21, 23, or 65
   2. 25, 26, or 28
   3. 30
   4. 31
   5. None of the above

104. (same question)
   1. 57
   2. 58
   3. 59
   4. 60, 61, 63, or 64
   5. None of the above

105. (same question)
   1. 68 or 70
   2. 72
   3. 73
   4. 75
   5. None of the above

APPENDIX C

DEMOGRAPHICS

The following tables identify the survey sample by demographic characteristic. Those observations that did not identify their rank (2), were of ranks not specifically targeted at the school the survey was administered (5), or incorrectly coded a response to a particular question were deleted.

Rank of Respondents

	Total	Percentage of Sample
Staff Sergeant	107	32.33%
Captain	96	29.00%
Major	111	33.53%
Lieutenant Colonel	17	5.14%

Level of Education

	Total	Percentage of Sample
High School degree or equivalent	90	27.19%
Vocational/Technical degree	15	4.53%
Bachelor's degree	163	49.24%
Graduate degree	58	17.52%
PhD or JD	5	1.51%

Number of different commands or assignments

	Total	Percentage of Sample
1 - 2	11	3.32%
3 - 4	64	19.34%
5 - 6	103	31.12%
More than 6	151	45.62%

Personal definition of "long-term"

	Total	Percentage of Sample
3 - 9 months	22	6.65%
9 - 15 months	62	18.73%
15 - 24 months	91	27.49%
24 - 48 months	88	26.59%
Greater than 48 months	68	20.54%

Assignment at HQMC

	Total	Percentage of Sample
Yes	59	18.00%
No	271	82.00%

Served on General's staff

	Total	Percentage of Sample
Yes	107	32.33%
No	224	67.67%

USMC representative to the defense industry

	Total	Percentage of Sample
Yes	17	5.14%
No	314	94.86%

Gender

	Total	Percentage of Sample
Male	315	95.17%
Female	16	4.83%

Years of service

	Total	Percentage of Sample
5 - 7	27	8.16%
8 - 9	48	14.50%
10 - 15	201	60.73%
More than 15	55	16.62%

Military Occupational Specialty Field

	Total	Percentage of Sample
01	18	5.3%
02	5	1.5%
03	75	22.2%
04	6	1.8%
08	25	7.4%
11/13	14	4.1%
14/15/46/55	1	0.3%
18	8	2.4%

21/23/65	12	3.6%
25/26/28	20	5.9%
30	24	7.1%
31	1	0.3%
44	3	0.9%
57	1	0.3%
58	3	0.9%
59	1	0.3%
60/61/63/64	22	6.5%
68/70	3	0.9%
72	2	0.6%
73	2	0.6%
75	54	16.0%
Missing*	38	11.2%

*Denotes those occupation fields mistakenly left off questionnaire (34,35,44,84) and those respondents who failed to mark this particular set of questions.

APPENDIX D

SUMMARY STATISTICS

Scale - Part One

Individual importance to being personally committed to a change:

1 = Very low 2 = Low 3 = Moderate 4 = Fairly high 5 = High

Mean	StDev	Question	
4.19	1.08	1.	Possible loss of job satisfaction (working conditions, pride, responsibility, friends and important contacts)
3.44	1.30	2.	Possible loss of money (bonuses lost, for example)
4.02	1.14	3.	Possible loss of job security (authority, personal freedom, status)
2.96	1.25	4.	Possible loss of job stability (requirement to change jobs or PCS)
2.56	1.26	5.	There is usually no need to change
2.74	1.23	6.	In the short term, change will create more harm than good
2.89	1.47	7.	In the long term, change will create more harm than good
2.98	1.30	8.	Personal lack of respect for the person making the change
3.49	1.35	9.	Personal lack of respect for the competence of the person making the change
3.60	1.29	10.	I am told what to do but not why
2.86	1.12	11.	I may have negative attitudes toward the job, organization, or my boss
3.73	1.16	12.	I am not allowed input into the change effort
3.03	1.19	13.	The change may be the result of someone's personal criticism of my previous efforts
2.98	1.34	14.	Change adds work, confusion, mistakes and other negative results
3.23	1.43	15.	Change requires effort by all involved or affected
3.33	1.14	16.	The change may be poorly timed
2.41	1.25	17.	Change becomes an opportunity for others to challenge my authority
3.58	1.37	18.	I resent hearing about changes secondhand

Scale - Part Two

Degree to which the loss of this would influence my commitment to a change....

1 = Very low 2 = Low 3 = Moderate 4 = Fairly high 5 = High

Mean	StDev	Question	
4.16	1.16	19.	Pride
3.64	1.21	20.	Job stability
3.53	1.30	21.	Money
3.73	1.09	22.	Personal freedom
4.19	0.98	23.	Responsibility
3.89	1.03	24.	Authority

3.14	1.05	25.	Working conditions
2.99	1.21	26.	Friends
2.54	1.19	27.	Important contacts
3.02	1.24	28.	Status

Scale - Part Three

Degree to which I agree/disagree with the following statement....

1 = Strongly agree
2 = Agree
3 = Neutral
4 = Disagree
5 = Strongly disagree

Point One: Create constancy of purpose for improvement of product and service.

Mean	StDev	Question	
3.76	1.28	29.	In planning, it is the sole responsibility of higher headquarters and staff sections to determine the needs and requirements of the product or service user and pass that information to the appropriate levels within their command.
3.15	1.28	30.	SNCOs within a command should be responsible for policy, values, and the long term course for the organization.
2.66	1.30	31.	Long term planning is effective at levels lower than the commanding officer.
2.73	1.21	32.	Long term planning should be made at levels lower than the commanding officer.
3.24	1.06	33.	Marine Corps policies and practices that reward short term planning more than long term planning are necessary.
2.47	1.25	45.	Officers within a command should be responsible for policy, values, and the long term course for the organization.
1.72	0.91	88.	Officers should include SNCOs in formulating policy, values, and the long term course for the organization.

Point Two: Adopt the new philosophy.

Mean	StDev	Question	
3.34	1.21	34.	The nature of the Marine Corps' mission and training requires a dependence on short term planning over long term planning.
4.24	1.01	35.	Everything is okay in the Marine Corps, so why change?
3.84	1.16	36.	Although faced with reduced funding and manning levels, our present course in the Marine Corps will allow a high degree of readiness and mission accomplishment without major changes.
2.55	1.13	37.	I believe that the Marine Corps needs to make major improvements in the way we operate.
2.25	1.16	38.	I believe that we should put more emphasis on improving the quality of what we do than meeting budget (money) and schedules (time required to meet specific objectives).

Point Three: Cease dependence on mass inspection.

Mean	StDev	Question
2.95	1.26	39. The Marine Corps is dependent on inspections to achieve desired results.
2.87	1.14	40. Ceasing emphasis on individual performance inspections will compromise safety or the quality of performance that we presently observe.
2.86	1.12	41. Ceasing emphasis on unit inspections will compromise safety or the quality of performance that we presently observe.
2.63	1.09	42. I need to inspect my subordinate's work to ensure that it is of the highest quality.

Point Five: Improve constantly and forever the system of production and service.

Mean	StDev	Question
4.31	0.86	43. The Marine Corps is as good as it can get.
2.91	1.14	44. My personal performance is always at my highest level of capability.
2.43	1.27	46. Lack of time (training time, personal time or other) is one of the biggest if not the single biggest barrier to continuously improving personal or unit performance.
2.89	1.18	47. Continuous improvements to quality of personal or unit performance cost more time, money, or other resources.
3.85	0.98	48. The cost of continuous improvements to the quality of personal or unit performance is usually more than the benefits gained.

Point Twelve: Remove barriers to pride of workmanship.

Mean	StDev	Question
2.03	1.19	49. One of a leader's most important jobs is to remove organization/system barriers (people, policies, procedures, etc.) that hinder efficiency and effectiveness.
4.08	1.07	50. It's too much effort to remove barriers that keep a unit from being effective.
3.11	1.15	51. People above me create barriers that won't allow me to improve.
3.28	1.08	52. Current Marine Corps policies and procedures don't allow enough latitude or freedom to improve my work.

Point Eight: Drive out fear.

Mean	StDev	Question
2.04	1.07	53. Leadership by fear and force is intolerable.
2.01	1.10	54. Leadership by fear and force squanders our greatest resource, our people.
2.66	1.25	55. There is no place for leadership by fear and force in the Marine Corps.
2.92	1.19	56. Some Marines (officer and enlisted) need to be led by fear and force in order to get them to perform to standard.

Point Nine: Break down barriers between staff areas.

Mean	StDev	Question
1.62	0.83	57. Team play within a unit is a primary requirement for achieving mission accomplishment.
2.29	1.13	58. Personal or unit competition for awards (informal as well as formal recognition) increases the quality of performance of all who compete.
3.34	1.03	59. Close supervision and/or formal inspections foster communication and cooperation within a unit.
2.77	1.12	60. "Assistance visits" from higher headquarters or within a unit foster communication and cooperation within a unit.

Point Ten: Eliminate slogans, exhortations and targets for the work force.

Mean	StDev	Question	
3.15	1.15	61.	Slogans ("Safety is everyone's responsibility," for example) significantly contribute to individual or unit performance.
3.51	0.98	62.	Most units rely heavily on slogans to motivate Marines to do a better job.
3.43	1.00	63.	Slogans motivate Marines to do a better job.
2.87	1.02	64.	Slogans that come from a unit's leadership tend to have little or no affect on the attitudes or performance of junior Marines.

Point Eleven: Eliminate numerical quotas.

Mean	StDev	Question	
3.20	0.93	65.	Technical manual (TM) work standards are reliable estimates of how long a job should take.
2.98	0.99	66.	Marine technicians that cannot meet TM work standards usually lack experience, knowledge or motivation.
2.31	0.99	67.	Eliminating work standards causes confusion or the need for increased supervision.

Point Seven: Institute leadership.

Mean	StDev	Question	
3.56	1.13	68.	NCOs receive adequate leadership training for their particular rank and responsibility.
3.07	1.14	69.	Officers receive adequate leadership training for their particular rank and responsibility.
2.88	1.13	70.	Most officers and SNCOs have the opportunity to participate in the same small group or unit training that has been scheduled for their units.
2.73	1.13	71.	Present Marine Corps' leadership fundamentals can get us through all situations.
2.30	0.92	72.	A good leader is one who sets up a system, directs the work through subordinates.
1.92	0.70	73.	A good leader develops a basis to set standards of performance for his subordinates.
1.70	0.76	74.	A good leader sets goals and targets for mission accomplishment.
2.23	0.88	75.	A good leader rates subordinate performance against these targets.

Point Six: Institute training.

Mean	StDev	Question	
1.85	0.93	76.	Continuing MOS training for all Marines should be among the foremost concerns of unit leadership.
2.08	0.97	77.	The Marine Corps should invest more time and money in MOS training for personnel.
3.28	1.00	78.	Marines generally feel that they have received the proper amount of MOS skill training to be successful in their jobs.
2.70	1.20	79.	I feel that I have received the proper amount of MOS training to be successful in my job.
3.41	1.03	80.	Quantitative methods (basing decisions on numbers gained through different measurement techniques vice opinions or experience) should be taught at all levels.
3.77	0.92	81.	Quantitative methods should be used as a primary factor in daily decision making at all levels.

Point Thirteen: Institute a vigorous program of education and retraining.

Mean	StDev	Question
2.09	0.99	82. Continuing education (warfighting, college, other outside education) for all Marines should be among the foremost concerns of unit leadership.
2.13	0.98	83. The Marine Corps should invest more money in educating (warfighting, college, etc.) personnel.
2.63	1.12	84. I feel that I have received the proper amount of education to be successful in my job.
2.44	1.08	85. I feel that emphasizing outside education for all ranks will improve individual performance and unit readiness.

Point Fourteen: Take action to accomplish the transformation.

Mean	StDev	Question
2.82	1.06	86. "Do not tell Marines how to do something, just tell them what you want done." Marines are experienced enough to figure out how to accomplish the desired outcome.
3.02	1.16	87. Leaders should not work directly with their subordinates on the process, the how and the why unless their subordinates seek assistance. They should only supervise.

APPENDIX E

DATA TABLES

TABLE OF RANK BY Q30

30. SNCOs within a command should be responsible for policy, values, and the long term course for the organization.

Frequency / Percent / Row Pct / Col Pct	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	Total
STAFF SERGEANT	34	31	24	11	7	107
	10.30	9.39	7.27	3.33	2.12	32.42
	31.78	28.97	22.43	10.28	6.54	
	80.95	44.93	36.36	10.78	13.73	
CAPTAIN	5	22	23	36	10	96
	1.52	6.67	6.97	10.91	3.03	29.09
	5.21	22.92	23.96	37.50	10.42	
	11.90	31.88	34.85	35.29	19.61	
MAJOR	3	13	13	50	31	110
	0.91	3.94	3.94	15.15	9.39	33.33
	2.73	11.82	11.82	45.45	28.18	
	7.14	18.84	19.70	49.02	60.78	
LIEUTENANT COL	0	3	6	5	3	17
	0.00	0.91	1.82	1.52	0.91	5.15
	0.00	17.65	35.29	29.41	17.65	
	0.00	4.35	9.09	4.90	5.88	
Total	42	69	66	102	51	330
	12.73	20.91	20.00	30.91	15.45	100.00

Statistic	DF	Value	Prob
Chi-Square	12	102.540	0.000

Effective Sample Size = 330 Frequency Missing = 1

Correlation Data

Rank	Correlated Question (to response)	Correlation Coefficient	Probability
Major	27	-.1718	.076

TABLE OF RANK BY Q40

40. Ceasing emphasis on individual performance inspections will compromise safety or the quality of performance that we presently observe.

Frequency Percent Row Pct Col Pct	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	Total
STAFF SERGEANT	24	35	18	22	8	107
	7.25	10.57	5.44	6.65	2.42	32.33
	22.43	32.71	16.82	20.56	7.48	
	66.67	31.25	29.03	21.78	40.00	
CAPTAIN	6	36	22	30	2	96
	1.81	10.88	6.65	9.06	0.60	29.00
	6.25	37.50	22.92	31.25	2.08	
	16.67	32.14	35.48	29.70	10.00	
MAJOR	6	33	19	43	10	111
	1.81	9.97	5.74	12.99	3.02	33.53
	5.41	29.73	17.12	38.74	9.01	
	16.67	29.46	30.65	42.57	50.00	
LIEUTENANT COL	0	8	3	6	0	17
	0.00	2.42	0.91	1.81	0.00	5.14
	0.00	47.06	17.65	35.29	0.00	
	0.00	7.14	4.84	5.94	0.00	
Total	36	112	62	101	20	331
	10.88	33.84	18.73	30.51	6.04	100.00

Statistic	DF	Value	Prob
Chi-Square	12	34.626	0.001

Sample Size = 331

Correlation Data

Rank	Correlated Question (to response)	Correlation Coefficient	Probability
Staff Sergeant	1	-.18248	.0599
	3	-.27513	.0041

TABLE OF RANK BY Q41

41. Ceasing emphasis on unit inspections will compromise safety or the quality of performance that we presently observe.

Frequency / Percent / Row Pct / Col Pct	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	Total
STAFF SERGEANT	21	44	9	29	4	107
	6.34	13.29	2.72	8.76	1.21	32.33
	19.63	41.12	8.41	27.10	3.74	
	65.63	35.77	18.37	25.66	28.57	
CAPTAIN	5	37	17	32	5	96
	1.51	11.18	5.14	9.67	1.51	29.00
	5.21	38.54	17.71	33.33	5.21	
	15.63	30.08	34.69	28.32	35.71	
MAJOR	6	35	20	45	5	111
	1.81	10.57	6.04	13.60	1.51	33.53
	5.41	31.53	18.02	40.54	4.50	
	18.75	28.46	40.82	39.82	35.71	
LIEUTENANT COL	0	7	3	7	0	17
	0.00	2.11	0.91	2.11	0.00	5.14
	0.00	41.18	17.65	41.18	0.00	
	0.00	5.69	6.12	6.19	0.00	
Total	32	123	49	113	14	331
	9.67	37.16	14.80	34.14	4.23	100.00

Statistic	DF	Value	Prob
Chi-Square	12	26.736	0.008

Sample Size = 331
WARNING: 30% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

Correlation Data

Rank	Correlated Question (to response)	Correlation Coefficient	Probability
Staff Sergeant	3	-.16381	.0918

TABLE OF RANK BY Q42

42. I need to inspect my subordinate's work to ensure that it is of the highest quality.

Frequency / Percent / Row Pct / Col Pct	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	Total
STAFF SERGEANT	28	39	17	19	4	107
	8.46	11.78	5.14	5.74	1.21	32.33
	26.17	36.45	15.89	17.76	3.74	
	62.22	29.77	25.00	25.68	30.77	
CAPTAIN	7	40	19	25	5	96
	2.11	12.08	5.74	7.55	1.51	29.00
	7.29	41.67	19.79	26.04	5.21	
	15.56	30.53	27.94	33.78	38.46	
MAJOR	9	45	28	26	3	111
	2.72	13.60	8.46	7.85	0.91	33.53
	8.11	40.54	25.23	23.42	2.70	
	20.00	34.35	41.18	35.14	23.08	
LIEUTENANT COL	1	7	4	4	1	17
	0.30	2.11	1.21	1.21	0.30	5.14
	5.88	41.18	23.53	23.53	5.88	
	2.22	5.34	5.88	5.41	7.69	
Total	45	131	68	74	13	331
	13.60	39.58	20.54	22.36	3.93	100.00

Statistic	DF	Value	Prob
Chi-Square	12	23.933	0.021

Sample Size = 331
WARNING: 35% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

Correlation Data

Rank	Correlated Question (to response)	Correlation Coefficient	Probability
Staff Sergeant	1	-.25593	.0078
	3	-.20672	.0326
	5	-.20263	.0363
	11	-.24988	.0094
	26	-.21476	.0263

Captain	11	-.17612	.0861
	16	-.19490	.0571
	25	-.21672	.0339
	26	-.20525	.0448
	27	-.17067	.0982

TABLE OF RANK BY Q44

44. My personal performance is always at my highest level of capability.

Frequency / Percent / Row Pct / Col Pct	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	Total
STAFF SERGEANT	18	46	15	21	7	107
	5.44	13.90	4.53	6.34	2.11	32.33
	16.82	42.99	14.02	19.63	6.54	
	62.07	36.80	34.88	18.42	35.00	
CAPTAIN	4	26	12	48	6	96
	1.21	7.85	3.63	14.50	1.81	29.00
	4.17	27.08	12.50	50.00	6.25	
	13.79	20.80	27.91	42.11	30.00	
MAJOR	7	48	12	38	6	111
	2.11	14.50	3.63	11.48	1.81	33.53
	6.31	43.24	10.81	34.23	5.41	
	24.14	38.40	27.91	33.33	30.00	
LIEUTENANT COL	0	5	4	7	1	17
	0.00	1.51	1.21	2.11	0.30	5.14
	0.00	29.41	23.53	41.18	5.88	
	0.00	4.00	9.30	6.14	5.00	
Total	29	125	43	114	20	331
	8.76	37.76	12.99	34.44	6.04	100.00

Statistic	DF	Value	Prob
Chi-Square	12	33.255	0.001

Sample Size = 331

Correlation Data

Rank	Correlated Question (to response)	Correlation Coefficient	Probability
Staff Sergeants	2	-.17050	.0791
	11	-.24037	.0126
	15	.20912	.0306
	27	-.16438	.0907

TABLE OF RANK BY Q58

58. Personal or unit competition for awards (informal as well as formal recognition) increases the quality of performance of all who compete.

Frequency Percent Row Pct Col Pct	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	Total
STAFF SERGEANT	47	41	6	9	4	107
	14.20	12.39	1.81	2.72	1.21	32.33
	43.93	38.32	5.61	8.41	3.74	
	55.95	28.67	13.64	20.45	25.00	
CAPTAIN	14	42	14	19	7	96
	4.23	12.69	4.23	5.74	2.11	29.00
	14.58	43.75	14.58	19.79	7.29	
	16.67	29.37	31.82	43.18	43.75	
MAJOR	20	53	19	16	3	111
	6.04	16.01	5.74	4.83	0.91	33.53
	18.02	47.75	17.12	14.41	2.70	
	23.81	37.06	43.18	36.36	18.75	
LIEUTENANT COL	3	7	5	0	2	17
	0.91	2.11	1.51	0.00	0.60	5.14
	17.65	41.18	29.41	0.00	11.76	
	3.57	4.90	11.36	0.00	12.50	
Total	84	143	44	44	16	331
	25.38	43.20	13.29	13.29	4.83	100.00

Statistic	DF	Value	Prob
Chi-Square	12	43.776	0.000

Sample Size = 331
WARNING: 25% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

Correlation Data

Rank	Correlated Question (to response)	Correlation Coefficient	Probability
Staff Sergeants	2	-.17288	.0750
	19	-.31483	.0010
	20	-.43146	.0001
	21	-.16882	.0822
	26	-.21005	.0299

	27	-.22108	.0227
	28	-.19936	.0395
Captains	12	-.25550	.0120
	15	.27078	.0076
Majors	4	.18582	.0509
	17	-.17522	.0671
	28	.22402	.0181
Lieutenant Colonels	6	.62509	.0073
	14	-.51395	.0348
	17	-.45638	.0656
	19	-.57023	.0168
	20	-.57380	.0160
	28	-.55101	.0219

TABLE OF RANK BY Q71

71. Present Marine Corps' leadership fundamentals can get us through all situations.

Frequency / Percent / Row Pct / Col Pct	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	Total
STAFF SERGEANT	16	44	23	20	3	106
	4.85	13.33	6.97	6.06	0.91	32.12
	15.09	41.51	21.70	18.87	2.83	
	43.24	33.33	35.94	26.32	14.29	
CAPTAIN	10	33	16	26	11	96
	3.03	10.00	4.85	7.88	3.33	29.09
	10.42	34.38	16.67	27.08	11.46	
	27.03	25.00	25.00	34.21	52.38	
MAJOR	10	51	22	22	6	111
	3.03	15.45	6.67	6.67	1.82	33.64
	9.01	45.95	19.82	19.82	5.41	
	27.03	38.64	34.38	28.95	28.57	
LIEUTENANT COL	1	4	3	8	1	17
	0.30	1.21	0.91	2.42	0.30	5.15
	5.88	23.53	17.65	47.06	5.88	
	2.70	3.03	4.69	10.53	4.76	
Total	37	132	64	76	21	330
	11.21	40.00	19.39	23.03	6.36	100.00

Statistic	DF	Value	Prob
Chi-Square	12	18.442	0.103

Effective Sample Size = 330 Frequency Missing = 1

Correlation Data

Rank	Correlated Question (to response)	Correlation Coefficient	Probability
Staff Sergeants	15	.25634	.0080
	16	.18063	.0639
	27	.17097	.0797
Majors	4	.22597	.0171
	9	-.16310	.0872
	21	.20425	.0315
	25	.24333	.0101

TABLE OF RANK BY Q80

80. Quantitative methods (basing decisions on numbers gained through different measurement techniques vice opinions or experience) should be taught at all levels.

Frequency / Percent / Row Pct / Col Pct	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	Total
STAFF SERGEANT	9	15	42	29	11	106
	2.73	4.55	12.73	8.79	3.33	32.12
	8.49	14.15	39.62	27.36	10.38	
	81.82	26.79	43.75	23.97	23.91	
CAPTAIN	1	16	25	40	14	96
	0.30	4.85	7.58	12.12	4.24	29.09
	1.04	16.67	26.04	41.67	14.58	
	9.09	28.57	26.04	33.06	30.43	
MAJOR	1	22	25	44	19	111
	0.30	6.67	7.58	13.33	5.76	33.64
	0.90	19.82	22.52	39.64	17.12	
	9.09	39.29	26.04	36.36	41.30	
LIEUTENANT COL	0	3	4	8	2	17
	0.00	0.91	1.21	2.42	0.61	5.15
	0.00	17.65	23.53	47.06	11.76	
	0.00	5.36	4.17	6.61	4.35	
Total	11	56	96	121	46	330
	3.33	16.97	29.09	36.67	13.94	100.00

Statistic	DF	Value	Prob
Chi-Square	12	25.503	0.013

Effective Sample Size = 330 Frequency Missing = 1
WARNING: 35% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

Correlation Data

Rank	Correlated Question (to response)	Correlation Coefficient	Probability
Captain	1	.19994	.0508
Lieutenant Colonels	4	.44016	.0770
	17	-.44987	.0700
	27	.41336	.0991

TABLE OF RANK BY Q81

81. Quantitative methods should be use as a primary factor in daily decision making at all levels.

Frequency / Percent / Row Pct / Col Pct	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE	Total
STAFF SERGEANT	3	15	37	38	13	106
	0.91	4.55	11.21	11.52	3.94	32.12
	2.83	14.15	34.91	35.85	12.26	
	75.00	50.00	51.39	24.20	19.40	
CAPTAIN	1	5	14	53	23	96
	0.30	1.52	4.24	16.06	6.97	29.09
	1.04	5.21	14.58	55.21	23.96	
	25.00	16.67	19.44	33.76	34.33	
MAJOR	0	8	19	55	29	111
	0.00	2.42	5.76	16.67	8.79	33.64
	0.00	7.21	17.12	49.55	26.13	
	0.00	26.67	26.39	35.03	43.28	
LIEUTENANT COL	0	2	2	11	2	17
	0.00	0.61	0.61	3.33	0.61	5.15
	0.00	11.76	11.76	64.71	11.76	
	0.00	6.67	2.78	7.01	2.99	
Total	4	30	72	157	67	330
	1.21	9.09	21.82	47.58	20.30	100.00

Statistic	DF	Value	Prob
Chi-Square	12	33.394	0.001

Effective Sample Size = 330 Frequency Missing = 1
WARNING: 35% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

Correlation Data

Rank	Correlated Question (to response)	Correlation Coefficient	Probability
Captain	7	.18066	.0782
	9	.23372	.0219
	10	.20837	.0416
	15	-.21458	.0358
	23	.28021	.0057

Major	1	.16817	.0777
	17	-.21727	.0226
	27	-.22343	.0184
Lieutenant Colonel	4	.42821	.0864
	17	-.42330	.0904

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